4.2 Air Quality

4.2.1 Environmental Setting

PHYSICAL SETTING

Climate and Meteorology

While the primary factors that determine air quality are the locations of air pollutant sources and the amount of pollutants emitted from those sources, meteorological conditions and topography are also important factors. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. Unique geographic features throughout the state define fifteen air basins with distinctive regional climates. The air quality study area for the Proposed Project is located on the San Francisco Peninsula in the San Francisco Bay Area Air Basin (SFBAAB).

The peninsula region of the Bay Area extends from the area northwest of San Jose to the Golden Gate. The Santa Cruz Mountains, part of the Pacific Coast Ranges, extend up the center of the peninsula, with elevations exceeding 2,000 feet at the south end, and gradually decreasing to 500 feet elevation in South San Francisco, where the mountain range terminates. On the west side of the mountains lie small coastal towns, such as Half Moon Bay and Pacifica, that due to coastal ocean upwelling and northwest winds, experience a high incidence of cool, foggy weather in the summer. On the east side of the mountain range lie the larger cities. Cities in the southeastern peninsula experience warmer temperatures and few foggy days because the marine layer, with an average depth of 1,700 feet, is blocked by the 2,000-foot ridge to the west. At the north end of the peninsula lies San Francisco. Because most of the topography of San Francisco is below 200 feet, the marine layer is able to flow across most of the city, making its climate cool and windy.

The blocking effect of the Santa Cruz Mountains can be seen in the summertime maximum temperatures. For example, at Half Moon Bay and San Francisco, the average maximum daily summertime temperatures are in the mid-60s, while on the eastern side near the City of Belmont, the maximum temperatures are in the low 80s for the same period. Daily maximum temperatures throughout the peninsula during the winter months are in the high 50s. Large temperature gradients are not seen in the minimum temperatures. Average minimum temperatures at Half Moon Bay are about 43°F in winter, and 50–52°F in summer. The east peninsula, near the City of Belmont, reports winter minimum temperatures of 40°F, and summer minimum temperatures of 52–54°F.

Annual average wind speeds range from 5–10 mph throughout the peninsula. The tendency is for the higher wind speeds to be found along the western coast. However, winds on the east side of the

peninsula can also be high in certain areas because low-lying areas in the mountain range, at San Bruno Gap and Crystal Springs Gap, commonly allow the marine layer to pass across the peninsula.

The prevailing winds are westerly along the peninsula's west coast. Individual sites can show significant differences, however. For example, Fort Funston in western San Francisco County shows a southwest wind pattern, while Pillar Point in San Mateo County to the south shows a northwest wind pattern. Sites on the east side of the mountains also show a westerly pattern, although their wind patterns show influence by local topographic features. That is, a few hundred feet rise in elevation will induce flow around that feature instead of over it during stable atmospheric conditions. This can change the wind pattern by as much as 90 degrees over short distances. On mornings without a strong pressure gradient, areas on the east side of the peninsula often experience eastern flow in the surface layer, induced by upslope flow on the east-facing slopes and by the bay breeze. The bay breeze is rarely seen after noon because the stronger sea breeze dominates the flow pattern.

On the peninsula, there are two important gaps in the Santa Cruz Mountains. The larger of the two is the San Bruno Gap, extending from Fort Funston on the ocean side to the San Francisco International Airport on the bay side. Because the gap is oriented in the same northwest to southeast direction as the prevailing winds, and because the elevations along the gap are under 200 feet, marine air is easily able to penetrate into the bay.

The other gap in the Santa Cruz Mountains is the Crystal Springs Gap, along Highway 92 between Half Moon Bay and San Carlos. The low point is 900 feet, with elevations of 1,500 feet north and south of the gap. As the sea breeze strengthens on summer afternoons, the gap permits maritime air to pass across the mountains and its cooling effect is commonly seen from San Mateo to Redwood City.

Rainfall amounts on the east side of the peninsula are somewhat lower than on the west side, with San Francisco and Redwood City reporting an average of 19.5 inches per year. On the west side, Half Moon Bay reports 25 inches per year. Areas in the Santa Cruz Mountains are significantly higher, especially west of the ridge line, due to orographic-lifting induced condensation, close proximity to a moisture source, and fog drip.

Air pollution potential is highest along the southeastern portion of the peninsula because this area is most protected from the high winds and fog of the marine layer, the emission density is relatively high, and pollutant transport from upwind sites is possible. In San Francisco, to the north, pollutant emissions are high, but winds are generally fast enough to carry the pollutants away before they can accumulate.

Pollutants of Concern

Criteria Air Pollutants

Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and particulate matter (PM10 and PM2.5) are commonly used as indicators of ambient air quality conditions. These pollutants are known as “criteria pollutants” and are regulated by the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (ARB) through national and California ambient air quality standards, National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS), respectively. Ozone and NO_2 are considered regional pollutants because they (or their precursors) affect air quality on

a regional scale. Pollutants such as CO, SO_2, and lead are considered local pollutants that tend to accumulate in the air locally. PM10 and PM2.5 are both regional and local pollutants.

The primary criteria pollutants of concern in the plan area are ozone (including its precursors, nitrogen oxides [NO_X] and reactive organic gases [ROG][1]), CO, and PM. Principal characteristics surrounding these pollutants are discussed below.

Ozone, or smog, is a photochemical oxidant that is formed when ROG and NO_X (both by-products of the internal combustion engine) react with sunlight. Ozone poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Additionally, ozone has been tied to crop damage, typically in the form of stunted growth and premature death. Ozone can also act as a corrosive, resulting in property damage such as the degradation of rubber products.

Reactive Organic Gases are compounds made up primarily of hydrogen and carbon atoms. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROG are emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Negative effects on human health are not caused directly by ROG, but rather by reactions of ROG to form secondary pollutants such as ozone.

Nitrogen Oxides serve as integral participants in the process of photochemical smog production. The two major forms of NO_X are nitric oxide (NO) and NO_2. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen (O_2) when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown gas formed by the combination of NO and oxygen. NO_X acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Carbon Monoxide is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. The primary negative health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.

Particulate Matter consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two categories of fine particulates are regularly measured—inhalable coarse particulate matter less than 10 microns in diameter, or PM10, and inhalable fine particulate matter less than 2.5 microns diameter, or PM2.5. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind on arid landscapes also contributes substantially to local particulate loading. Both PM10 and PM2.5 may negatively affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems. Diesel Particulate Matter (DPM) is the solid particulate matter in diesel exhaust emitted by the combustion of diesel fuel; more than 90 percent of DPM is less than one micron in diameter and so DPM is a subset of PM2.5.

[1] ROG is synonymous with volatile organic compounds (VOC), which is commonly used to describe compound limits for architectural coatings such as paint.

Toxic Air Contaminants

Although NAAQS and CAAQS have been established for criteria pollutants, no ambient standards exist for toxic air contaminants (TACs). Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, the ARB has consistently found no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risks they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA).

Air toxics are generated by a number of sources, including *stationary sources*, such as dry cleaners, gas stations, auto body shops, and combustion sources; *mobile sources*, such as motor vehicles, diesel trucks, ships, and trains; and *area sources*, such as farms, landfills, and construction sites. Negative health effects of TACs can be carcinogenic (cancer-causing), short-term (acute) noncarcinogenic, and long-term (chronic) noncarcinogenic. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders.

The primary TAC of concern associated with the plan are fine particulate matter (PM2.5) and diesel particulate matter (DPM). Exposure to these pollutants is strongly associated with mortality, respiratory diseases, and lung development in children, and other endpoints such as hospitalization for cardiopulmonary disease (San Francisco Department of Public Health 2008). ARB (1998) identified DPM as a TAC based on evidence demonstrating cancer effects in humans. The estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other TAC routinely measured in the near-term improvements area.

Asbestos is also a TAC of concern, particularly in association with demolition of older buildings and structures. Asbestos is a fibrous mineral, which is both naturally occurring in ultramafic rock (a rock type commonly found in California) and used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, including asbestosis and lung cancer, it is strictly regulated based on its natural widespread occurrence and its former use as a building material. Geological mapping in California does not indicate the presence of naturally occurring asbestos in the city (California Department of Conservation 2000)

Existing Air Quality Conditions

Local Criteria Pollutant Monitoring Data

A number of ambient air quality monitoring stations are located in the SFBAAB to monitor progress toward air quality standards attainment of NAAQS and CAAQS. There are no monitoring stations in the City of Belmont, but there is one just south in Redwood City at 897 Barron Avenue. Recent air quality monitoring results from the Redwood City station are summarized in Table 4.2-1. The data represent air quality monitoring for the last 3 years for which a complete dataset is available (2013–2015). As indicated in Table 4.2-1, the Redwood City monitoring station has experienced infrequent violations of state and federal air quality standards during this time period.

Table 4.2-1. Ambient Air Quality Monitoring Data from Redwood City Monitoring Station[1]

Pollutant Standards	*2013*	*2014*	*2015*
Ozone (O_3)			
Maximum 1-hour concentration (ppm)	0.083	0.086	0.086
Maximum 8-hour concentration (ppm)	0.075	0.065	0.071
Number of days standard exceeded[2]			
CAAQS 1-hour (>0.09 ppm)	0	0	0
CAAQS 8-hour (>0.070 ppm)	1	0	1
NAAQS 8-hour (>0.075 ppm)	0	0	0
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	1.6	1.6	1.6
Maximum 1-hour concentration (ppm)	3.6	3.2	3.4
Number of days standard exceeded[2]			
NAAQS 8-hour ($\geq$9 ppm)	0	0	0
CAAQS 8-hour ($\geq$9.0 ppm)	0	0	0
NAAQS 1-hour ($\geq$35 ppm)	0	0	0
CAAQS 1-hour ($\geq$20 ppm)	0	0	0
Nitrogen Dioxide (NO_2)			
State maximum 1-hour concentration (ppb)	53	55	47
State second-highest 1-hour concentration (ppb)	51	54	46
Annual average concentration (ppb)	12	11	11
Number of days standard exceeded			
CAAQS 1-hour (180 ppb)	0	0	0
Particulate Matter (PM10)[3]			
National[4] maximum 24-hour concentration ($\mu g/m^3$)	55.8	56.4	58.8
National[4] second-highest 24-hour concentration ($\mu g/m^3$)	53.7	52.0	47.2
State[5] maximum 24-hour concentration ($\mu g/m^3$)	58.1	54.7	58.0
State[5] second-highest 24-hour concentration ($\mu g/m^3$)	57.1	49.6	49.3
National annual average concentration ($\mu g/m^3$)	21.6	19.5	21.3
State annual average concentration ($\mu g/m^3$)[6]	22.2	20.0	21.
Number of days standard exceeded[2]			
NAAQS 24-hour (>150 $\mu g/m^3$)[7]	0	0	0
CAAQS 24-hour (>50 $\mu g/m^3$)[7]	5	1	3
Particulate Matter (PM2.5)			
National[4] maximum 24-hour concentration ($\mu g/m^3$)	39.0	35.0	34.6
National[4] second-highest 24-hour concentration ($\mu g/m^3$)	38.5	32.4	26.0

Table 4.2-1. Ambient Air Quality Monitoring Data from Redwood City Monitoring Station[1]

Pollutant Standards	*2013*	*2014*	*2015*
State[5] maximum 24-hour concentration (μg/m^3)	39.0	35.0	34.6
State[5] second-highest 24-hour concentration (μg/m^3)	38.5	32.4	26.0
National annual average concentration (μg/m^3)	10.7	7.2	6.0
State annual average concentration (μg/m^3)[6]	-	7.2	6.0
Number of days standard exceeded[3]			
NAAQS 24-hour (>35 μg/m^3)	3	0	0

Source: California Air Resources Board 2016a; U.S. Environmental Protection Agency 2016a.

Notes:

ppm = parts per million

NAAQS = National Ambient Air Quality Standards

CAAQS = California Ambient Air Quality Standards

μg/m^3 = micrograms per cubic meter

mg/m^3 = milligrams per cubic meter

\- = data not available

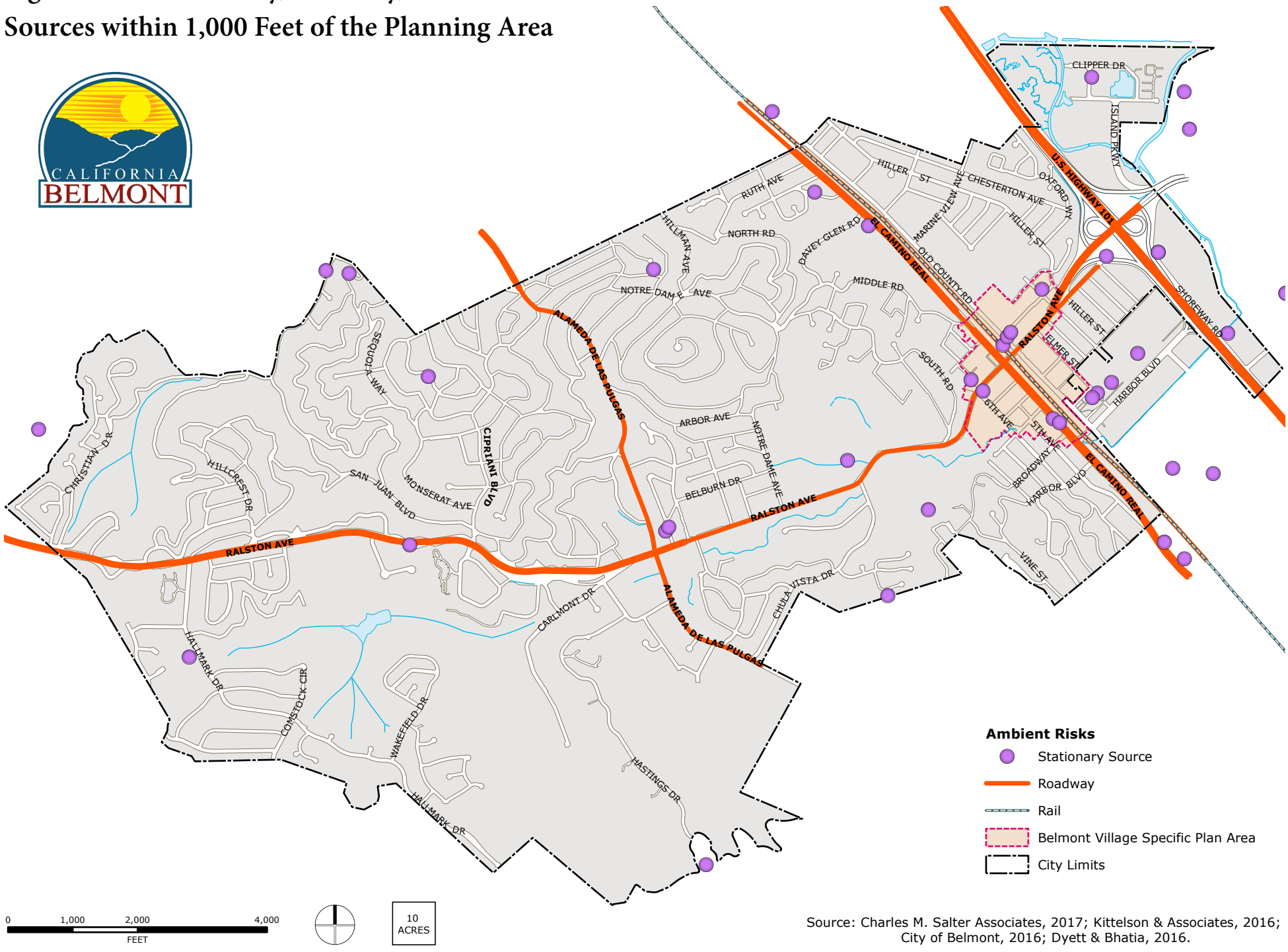
1. Data for Particulate Matter (PM10) was unavailable from the Redwood City Monitoring Station so data is taken from the San Jose – Jackson Street Monitoring Station.
2. An exceedance is not necessarily a violation.
3. National statistics are based on standard conditions data. In addition, national statistics are based on samplers using federal reference or equivalent methods.
4. State statistics are based on local conditions data.
5. Measurements usually are collected every 6 days.
6. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
7. Mathematical estimate of how many days' concentrations would have been measured as higher than the level of the standard had each day been monitored. Values have been rounded.

TAC Inventory

The Bay Area Air Quality Management District (BAAQMD) maintains an inventory of health risks associated with all permitted stationary sources within the SFBAAB. The inventory was last updated in 2012 and is publicly available in Google Earth format. Table 4.2-2 and Figure 4.2-1 summarize the stationary sources located in and within 1,000 feet of the proposed General Plan and Belmont Village Specific Plan (BVSP) boundaries. Risk values presented in the table are measured from the source fenceline and would dissipate as a function of distance from the source.[2] Some of the sources may be removed or relocated as a result of development supported by the Proposed Project.

[2] BAAQMD updated their risk assessment guidelines in 2016 to use more conservative exposure parameters and age sensitivity factors, as recommended by OEHHA. BAAQMD has not updated their Google Earth inventory to account for these updated parameters. Modeling indicates that the new parameters increase health risks by a factor of about

Figure 4.2-1: Stationary, Roadway, and Rail Air Pollutant Sources within 1,000 Feet of the Planning Area



Source: Charles M. Salter Associates, 2017; Kittelson & Associates, 2016; City of Belmont, 2016; Dyett & Bhatia, 2016.

Table 4.2-2. Health Risk Inventory for Stationary Sources In and Within 1,000 Feet of the Planning Area

Source Name	*Location*	*Cancer Risk[1]*	*Hazard Index*	*PM2.5 Concentration (ug/m^3)*
City of Belmont	Within GP and BVSP Area	3	<0.1	<0.1
Belmont 76 Service	Within GP and BVSP Area	32	<0.1	0.0
City of Belmont	Within GP and BVSP Area	<1	0.0	<0.1
G & G Greco #254519	Within GP and BVSP Area	39	<0.1	0.0
Belmont Fire Dept. Station 14	Within GP and BVSP Area	67	0.1	0.0
Hai Mini Mart	Within GP and BVSP Area	52	<0.1	<0.1
Cologne Auto Body	Within GP and BVSP Area	0	<0.1	0.0
Fineline Carpentry	Within GP and BVSP Area	0	<0.1	0.0
Mid-Peninsula Water District	Within GP Area	42	<0.1	<0.1
Mid-Peninsula Water District	Within GP Area	4	<0.1	<0.1
Mid-Peninsula Water District	Within GP Area	22	<0.1	<0.1
Mid-Peninsula Water District	Within GP Area	40	<0.1	<0.1
Chevron Station #92712	Within GP Area	62	0.1	0.0
Carlmont Village Shell	Within GP Area	12	<0.1	0.0
Mid-Peninsula Water District	Within GP Area	23	<0.1	<0.1
Mid-Peninsula Water District	Within GP Area	19	<0.1	<0.1
City of Belmont	Within GP Area	78	<0.1	<0.1
Mid-Peninsula Water District	Within GP Area	12	<0.1	<0.1
City of Belmont	Within GP Area	10	<0.1	<0.1
Summit Auto Body Painting	Within GP Area	1	<0.1	0.0
Mid-Peninsula Water District	Within GP Area and 1,000 feet of BVSP Area	40	<0.1	<0.1
City of Belmont	Within GP Area	1	<0.1	0.0
City of Belmont	Within GP Area	75	<0.1	<0.1
South Bayside System Authority	Within GP Area	102	<0.1	<0.1
County of San Mateo	Within GP Area and 1,000 feet of BVSP Area	45	<0.1	<0.1

Table 4.2-2. Health Risk Inventory for Stationary Sources In and Within 1,000 Feet of the Planning Area

Source Name	*Location*	*Cancer Risk[1]*	*Hazard Index*	*PM2.5 Concentration (ug/m^3)*
Moquin Press Inc.	Within GP Area and 1,000 feet of BVSP Area	1	<0.1	0.0
Peninsula Cardlock	Within GP Area and 1,000 feet of BVSP Area	11	<0.1	0.0
Belmont Apollo Inc.	Within GP Area and 1,000 feet of BVSP Area	16	<0.1	0.0
City of Belmont	Within GP Area	31	<0.1	<0.1
CA Water Service Company	Within 1,000 feet of GP Area	3	<0.1	<0.1
City of Belmont	Within 1,000 feet of GP Area	5	<0.1	<0.1
City of Belmont	Within 1,000 feet of GP Area	38	<0.1	<0.1
Pacific Fuel & Auto Service	Within 1,000 feet of GP Area	17	<0.1	0.0
PG&E	Within 1,000 feet of GP Area	111	<0.1	<0.1
Chilton Autobody	Within 1,000 feet of GP Area	0	0.0	<0.1
Unocal Service Station #2913	Within 1,000 feet of GP Area	19	<0.1	0.0
Auto Pride Wash	Within 1,000 feet of GP Area	4	<0.1	0.0
Equity Office Properties Trust	Within 1,000 feet of GP Area	0	0.0	0.0
City of Redwood City	Within 1,000 feet of GP Area	4	<0.1	<0.1
City of Redwood City	Within 1,000 feet of GP Area	5	<0.1	<0.1
Orcale Corporation	Within 1,000 feet of GP Area	374	0.1	0.5

Source: Bay Area Air Quality Management District 2012a

Notes:

GP = General Plan

1. Risks have been adjusted by a factor of 1.3744 to reflect OEHHA's and BAAQMD's updated health risk assessment guidelines (Lau pers. comm.).

Transportation TAC Sources

Four major roadways with average daily traffic (ADT) greater than 10,000 vehicles traverse the city.[3] These are Highway 101, El Camino Real, Ralston Avenue, and Alameda De Las Pulgas. Health risks are greatest adjacent to Highway 101 due to the volume of annual traffic; according to BAAQMD's screening tools, lifetime cancer risk 10 feet east of Highway 101 may exceed 150 cases per million (Bay Area Air Quality Management District 2011a; Lau pers. comm.). The Belmont Caltrain Station is also a source of diesel pollution, with existing lifetime cancer risk 10 feet east of the station estimated to exceed 245 cases per million (Kirk pers. comm.; Lau pers. comm.). Caltrain is currently electrifying its trains, which will reduce diesel exhaust and associated health risks in the plan area. The first electric trains will begin service in 2021 and full electrification is expected by 2040 (Caltrain 2016).

Attainment Status

Local monitoring data (Table 4.2-1) are used to designate areas as nonattainment, maintenance, attainment, or unclassified for NAAQS and CAAQS. The four designations are further defined as:

- Nonattainment – Assigned to areas where monitored pollutant concentrations violate the standard in question.
- Maintenance – Assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.
- Attainment – Assigned to areas where pollutant concentrations meet the standard in question over a designated period of time.
- Unclassified – Assigned to areas where data are insufficient to determine whether a pollutant is violating the standard in question.

Table 4.2-3 summarizes the attainment status for San Mateo County with regard to NAAQS and CAAQS.

[3] BAAQMD (2012b) considers roadways with greater than 10,000 ADT as "high volume roadways" and recommends they be included in the analysis of health risks.

Table 4.2-3. Federal and State Attainment Status for San Mateo County

Criteria Pollutant	*Federal Designation*	*State Designation*
O_3 (8-hour)	Marginal[1] Nonattainment	Nonattainment
CO	Moderate[2] Maintenance (P)	Attainment
PM10	Attainment	Nonattainment
PM2.5	Nonattainment	Nonattainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(No Federal Standard)	Attainment
Hydrogen Sulfide	(No Federal Standard)	Unclassified
Visibility	(No Federal Standard)	Unclassified

Source: California Air Resources Board 2016b; U.S. Environmental Protection Agency 2016b.

Notes:

CO = carbon monoxide

PM10 = particulate matter with a diameter of less than or equal to 10 microns

PM2.5 = particulate matter with a diameter of less than or equal to 2.5 microns

NO_2 = nitrogen dioxide

SO_2 = sulfur dioxide

(P) = designation applies to a portion of the county (the Belmont-portion of the County is considered maintenance)

1. Marginal nonattainment areas have a design value of 0.076 up to but not including 0.086 ppm.

2. Moderate maintenance areas have a design value of less than or equal to 12.7 ppm.

Sensitive Receptors

The NAAQS and CAAQS apply at publicly accessible areas, regardless of whether those areas are populated. For the purposes of air quality analysis, sensitive land uses are defined as locations where human populations, especially children, seniors, and sick persons, are located and where there is reasonable expectation of continuous human exposure according to the averaging period for the air quality standards (e.g., 24-hour, 8-hour, and 1-hour). Typical sensitive receptors include residences, hospitals, and schools. Diverse land uses and numerous sensitive receptors are distributed throughout the Planning Area, including residential uses, schools, parks, and open space.

State law restricts the siting of new schools within 500 feet of a freeway, urban roadways with 100,000 vehicles/day, or rural roadways with 50,000 vehicles/day, with some exceptions. ARB has published advisory recommendations on siting new sensitive land uses, with the same guidelines as the state school limitation (California Air Resources Board 2005).

REGULATORY SETTING

Air quality regulation in the United States is governed by the federal Clean Air Act (CAA). In addition to being subject to requirements of the CAA, air quality in California is also governed by more stringent regulations under the California Clean Air Act (CCAA). At the federal level, the

CAA is administered by the EPA. In California, the CCAA is administered by the ARB and by air districts at regional and local levels. The CAA and CCAA set overall air quality standards that are achieved by various rules and regulations at the regional and local level. This section describes relevant federal, state, and local regulations applicable to the proposed General Plan, the BVSP, and Climate Action Plan (CAP).

Federal Regulations

Clean Air Act

The CAA, first enacted in 1963, has been amended numerous times (1965, 1967, 1970, 1977, and 1990). The CAA establishes federal air quality standards, known as NAAQS, and specifies future dates for achieving compliance. The CAA also mandates that the state submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. The SIPs must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA most applicable to the updated General Plan are Title I (Nonattainment Provisions) and Title II (Mobile-Source Provisions).

Table 4.2-4 shows the NAAQS currently in effect for each criteria pollutant. The CAAQS (discussed below) are included for reference.

Table 4.2-4. Federal and State Ambient Air Quality Standards

			National Standards[1]	
Criteria Pollutant	*Average Time*	*California Standards*	*Primary*	*Secondary*
Ozone	1-hour	0.09 ppm	None[2]	None[2]
	8–hour	0.070 ppm	0.070 ppm	0.070 ppm
Particulate matter (PM10)	24-hour	50 μg/m^3	150 μg/m^3	150 μg/m^3
	Annual mean	20 μg/m^3	None	None
Fine particulate matter (PM2.5)	24-hour	None	35 μg/m^3	35 μg/m^3
	Annual mean	12 μg/m^3	12.0 μg/m^3	15 μg/m^3
Carbon monoxide	8-hour	9.0 ppm	9 ppm	None
	1-hour	20 ppm	35 ppm	None
Nitrogen dioxide	Annual mean	0.030 ppm	0.053 ppm	0.053 ppm
	1-hour	0.18 ppm	0.100 ppm	None
Sulfur dioxide[3]	Annual mean	None	0.030 ppm	None
	24-hour	0.04 ppm	0.014 ppm	None
	3-hour	None	None	0.5 ppm
	1-hour	0.25 ppm	0.075 ppm	None
Lead	30-day Average	1.5 μg/m^3	None	None
	Calendar quarter	None	1.5 μg/m^3	1.5 μg/m^3
	3-month average	None	0.15 μg/m^3	0.15 μg/m^3
Sulfates	24-hour	25 μg/m^3	None	None
Visibility reducing particles	8-hour	–[4]	None	None
Hydrogen sulfide	1-hour	0.03 ppm	None	None
Vinyl chloride	24-hour	0.01 ppm	None	None

Source: California Air Resources Board 2016c.

Notes:

ppm = parts per million. $\mu g/m^3$ = micrograms per cubic meter.

1. National standards are divided into primary and secondary standards. Primary standards are intended to protect public health, whereas secondary standards are intended to protect public welfare and the environment.
2. The federal 1-hour standard of 12 parts per hundred million was in effect from 1979 through June 15, 2005. The revoked standard is referenced because it was employed for such a long period and is a benchmark for State Implementation Plans.
3. The annual and 24-hour NAAQS for SO_2 only apply for 1 year after designation of the new 1-hour standard to those areas that were previously in nonattainment for 24-hour and annual NAAQS.
4. CAAQS for visibility-reducing particles is defined by an extinction coefficient of 0.23 per kilometer—visibility of 10 miles or more due to particles when relative humidity is less than 70 percent.

State Regulations

California Clean Air Act

In 1988, the state legislature adopted the CCAA, which established a statewide air pollution control program. The CCAA requires all air districts in the state to endeavor to meet the CAAQS by the earliest practical date. Unlike the federal CAA, the CCAA does not set precise attainment deadlines. Instead, the CCAA establishes increasingly stringent requirements for areas that will require more time to achieve the standards. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, visibility-reducing particles, and vinyl chloride. The CAAQS and NAAQS are listed together in Table 4.2-4.

ARB and the local air districts bear responsibility for achieving California's air quality standards, which are to be achieved through district-level air quality management plans that would be incorporated into the SIP. In California, EPA has delegated authority to prepare SIPs to ARB, which, in turn, has delegated that authority to individual air districts. ARB has traditionally established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs.

The CCAA substantially adds to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The CCAA also emphasizes the control of "indirect and area-wide sources" of air pollutant emissions. The CCAA gives local air pollution control districts explicit authority to regulate indirect sources of air pollution and to establish traffic control measures (TCMs).

State Tailpipe Emission Standards

ARB established a series of increasingly strict emission standards for new off-road diesel equipment, on-road diesel trucks, and harbor craft. New construction equipment used for future development under the Proposed Project, including heavy duty trucks and off-road construction equipment, will be required to comply with the standards.

Toxic Air Contaminant Regulations

California regulates TACs (equivalent to hazardous air pollutants at the federal level) primarily through the Toxic Air Contaminant Identification and Control Act (Tanner Act) and the Air Toxics "Hot Spots" Information and Assessment Act of 1987 ("Hot Spots" Act). In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Tanner Act created California's program to reduce exposure to air toxics. The "Hot Spots" Act supplements the Tanner Act by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

In August 1998, ARB identified DPM from diesel-fueled engines as TACs. In September 2000, ARB approved a comprehensive Diesel Risk Reduction Plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce DPM (respirable particulate matter) emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020. The plan identifies 14 measures that ARB will implement over the next several years. Future development under the Proposed Project would be required to comply with applicable diesel control measures.

Local Regulations

Air quality districts have local responsibility in overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required by CEQA. The air quality districts are also responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws and for ensuring that NAAQS and CAAQS are met.

The air quality study area falls under the jurisdiction of the BAAQMD. Under the CCAA, BAAQMD is required to develop an air quality plan for nonattainment criteria pollutants in the air district. The *2011 San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard* was prepared to address ROG and NO_X emissions following the region's nonattainment designation for the 1-hour ozone NAAQS. The *Bay Area 2010 Clean Air Plan* has also been adopted to provide an integrated control strategy for ozone, PM, TACs, and GHG emissions. BAAQMD is currently in the process of updating the *2010 Clean Air Plan*, and is expected to release the revised plan in early 2017. BAAQMD also adopted a redesignation plan for CO in 1994. The redesignation plan includes strategies to ensure the continuing attainment of NAAQS for CO in SFBAAB.

BAAQMD (2011b has adopted advisory CEQA emission thresholds in its *California Environmental Quality Act Air Quality Guidelines* (CEQA Guidelines) to assist lead agencies in determining the level of significance of project-related emissions.[4] According to the CEQA Guidelines, project emissions that exceed the recommended threshold levels are considered potentially significant and

[4] In 2010, BAAQMD revised their CEQA Guidelines to include thresholds of significance to assist in the review of projects under CEQA. These thresholds were overturned by a Superior Court decision in 2012 but upheld in a later Court of Appeal decision. In 2015, the California Supreme Court reduced the scope of what is considered an environmental impact for CEQA purposes in California Building Industry Association v. BAAQMD, concluding that CEQA does not generally require an analysis of how existing environmental conditions will impact a project's future users or residents. In 2016, the Court of Appeal remanded the case to the trial court with the direction to invalidate specific portions of the CEQA Guidelines that are inconsistent with the Supreme Court's holding. Due to ongoing legal activity, BAAQMD

should be mitigated where feasible. BAAQMD guidance also indicates that the potential air quality effects of long range plans, including general and specific plans, should be evaluated based on the plan's consistency with the *2010 Clean Air Plan*. The analysis should consider whether the plan supports the primary goals of the *2010 Clean Air Plan*, including applicable control measures from the *2010 Clean Air Plan*, or hinders attainment of any *2010 Clean Air Plan* control measures (Bay Area Air Quality Management District 2012b).

Future development under the Proposed Project may be subject to one or more of the following district rules, depending on the specific components of the individual project. These rules have been adopted by BAAQMD to reduce emissions throughout the area.

- Regulation 2, Rule 2 (New Source Review). This regulation contains requirements for Best Available Control Technology and emission offsets.
- Regulation 2, Rule 5 (New Source Review of Toxic Air Contaminants). This regulation outlines guidance for evaluating TAC emissions and their potential health risks.
- Regulation 6, Rule 1 (Particulate Matter). This regulation restricts emissions of PM darker than No. 1 on the Ringlemann Chart to less than 3 minutes in any 1 hour.
- Regulation 6, Rule 3 (Wood Burning Devices). This regulation restricts wood burning devices in all new development constructed after November 1, 2016.
- Regulation 7 (Odorous Substances): This regulation establishes general odor limitations on odorous substances and specific emission limitations on certain odorous compounds.
- Regulation 8 (Organic Compounds): This regulation limits the quantity of organic compounds (e.g., ROG) from various applications and process, including in architectural coatings and commercial cooking equipment and at gasoline dispensing facilities. The regulation outlines 53 rules based on the source type.
- Regulation 9 (Inorganic Gaseous Pollutants). This regulation limits emissions of inorganic gaseous pollutants (e.g., NO_X) generated by various sources, including natural gas-fired boilers and stationary internal combustion engines. The regulation outlines 14 rules based on the source type.
- Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing). This rule controls emissions of asbestos to the atmosphere during demolition, renovation, milling and manufacturing and establishes appropriate waste disposal procedures.

updated their CEQA guidelines (2012b) in 2012 to continue to provide direction to lead agencies on evaluating air quality impacts, but the guidelines did not include the quantitative thresholds adopted in their 2011 CEQA Guidelines. Lead agencies may continue to rely on the 1999 thresholds of significance in conjunction with the 2012 CEQA Guidelines or independently determine appropriate air quality thresholds of significance based on substantial evidence in the record.

4.2.2 Impact Analysis

SIGNIFICANCE CRITERIA

Implementation of the Proposed Project would have a potentially significant adverse impact if it would:

Criterion 1: Conflict with or obstruct implementation of the applicable air quality plan.

Criterion 2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

Criterion 3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).

Criterion 4: Expose sensitive receptors to substantial pollutant concentrations.

Criterion 5: Create objectionable odors affecting a substantial number of people.

Supplemental Criteria Pollutant Guidance

As discussed above, BAAQMD has provided guidance to assist lead agencies in determining the significance of criteria pollutant emissions. This analysis evaluates the impacts of the Proposed Project using a two-tiered approach that considers both plan-and project-level guidance recommended by BAAQMD in their CEQA Guidelines (2011b, 2012b).

First, this analysis considers whether the Proposed Project would conflict with the *2010 Clean Air Plan*, consistent with BAAQMD Guidance for assessing plan-level impacts (2012b). The analysis evaluates whether the Proposed Project supports the primary goals of the *2010 Clean Air Plan*, include applicable control measures from the *2010 Clean Air Plan*, and whether it would disrupt or hinder implementation of any *2010 Clean Air Plan* control measure.

Second, calculated criteria pollutant emissions are compared to BAAQMD's project-level thresholds. The ROG, NO_X, and PM thresholds are based on emissions levels identified under the New Source Review (NSR) program. The NSR program is a permitting program that was established by Congress as part of the CAA Amendments to ensure that air quality is not significantly degraded by new sources of emissions. The NSR program requires stationary sources receive permits before starting construction or use of the equipment. By permitting large stationary sources, the NSR program assures that new emissions would not slow regional progress toward attaining NAAQS. BAAQMD has concluded that the stationary pollutants described under the NSR program are equally significant to those pollutants generated with land use projects. BAAQMD's thresholds identified in Table 4.2-5 were set as the total emission thresholds associated within the NSR program to help attain NAAQS (Bay Area Air Quality Management District 2011b).

Table 4.2-5. Project-Level Emission Thresholds[1]

Analysis	BAAQMD
Regional Criteria Pollutants (Construction)	ROG: 54 lbs/day
	NO_X: 54 lbs/day
	PM10: 82 lbs/day (exhaust only)
	PM2.5: 54 lbs/day (exhaust only)
Regional Criteria Pollutants (Operations)	ROG: Same as construction
	NO_X: Same as construction
	PM10: 82 lbs/day
	PM2.5: 54 lbs/day

Sources: Bay Area Air Quality Management District 2011b

Notes:

ROG = reactive organic gases

lbs = pounds

NO_X = nitrogen oxide

PM10 = particulate matter that is 10 microns in diameter and smaller

PM2.5 = particulate matter that is 2.5 microns in diameter and smaller

1. While BAAQMD has not formally reinstated their thresholds in response to *California Building Industry Association v. BAAQMD*, the thresholds are based on substantial evidence identified in BAAQMD's 2009 Justification Report, which is incorporated by reference, and therefore the City as the lead agency has determined to use them within this document.

The City has reviewed the 1999 BAAQMD Thresholds of Significance and the 2010 CEQA Guidelines Thresholds of Significance and has determined that the significance thresholds outlined in the 2010 CEQA Guidelines are the appropriate thresholds for the following reasons: (1) as set forth in BAAQMD's 2009 Justification Report, the 2010 CEQA Guidelines represent the best and most recently available data and thresholds for assessing air quality impacts in the region; and (2) the thresholds of significance in the 2010 CEQA Guidelines are more conservative than the 1999 Thresholds of Significance. As such, a project that complies with the Thresholds of Significance identified in the 2010 CEQA Guidelines would also be below the 1999 thresholds. Accordingly, based on substantial evidence identified in BAAQMD's 2009 Justification Report, the City has determined that projects with emissions in excess of the thresholds shown in Table 4.2-5 would be expected to have a significant impact on air quality because an exceedance of the thresholds is anticipated to contribute to CAAQS and NAAQS violations.

It should be noted that the BAAQMD's project-level thresholds were developed to analyze emissions generated by a single project. Large-scale land use plans that consist of numerous individual projects will, by their nature, produce more criteria pollutants than single projects, even if the plans include efficiency measures to reduce future emissions. Use of the project-level thresholds to evaluate programmatic land use plans may therefore unfairly penalize the plans, yielding a significant and unavoidable conclusion simply due to scale. However, because a comparison to the project-level thresholds is informative to the analysis of the Proposed Project's impacts to air quality, this analysis accounts for both sets of thresholds.

Supplemental Health Risk Guidance

As discussed in Section 4.2.1, *Environmental Setting,* all criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation). Negative health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). Moreover, ozone precursors (ROG and NO_X) affect air quality on a regional scale. Health effects related to ozone, therefore, are the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and as such, translating project-generated criteria pollutants to specific health effects would not produce perceptible changes in human health outcomes where only small changes in criteria pollutant concentrations are produced. In other words, minor increases in regional air pollution from project-generated ROG and NO_X would have nominal or negligible impacts on human health.[5]

Because localized pollutants generated by a project that could result from implementation of the Proposed Project can directly affect adjacent sensitive receptors, the analysis of impacts to human health focuses only on those localized pollutants with the greatest potential to result in a significant, material impact on human health. This analysis is consistent with the current state-of-practice and published guidance by BAAQMD (2011b, 2012b), California Air Pollution Control Officers Association (2009), OEHHA (2015), and ARB (2000). The pollutants of concern include (1) TACs and (2) localized CO. BAAQMD guidance and thresholds for each pollutant are identified below. A discussion of potential health effects from regional criteria pollutants is included under Impact 4.2-4 for informational purposes.

Toxic Air Contaminants

Potential health risks from development supported by the Proposed Project are assessed based on BAAQMD's plan-level guidance. BAAQMD (2012b) requires overlay zones be established around all existing and planned sources of TACs, including stationary sources, high-traffic roadways, and railways. The overlay zones must identify goals, policies, and objectives to minimize potential TAC impacts to existing and future receptors.

BAAQMD has established project-level thresholds for cancer and non-cancer health hazards from DPM.[6] The "substantial" DPM threshold defined by BAAQMD is the probability of contracting cancer for the maximally exposed individual (MEI) exceeding 10.0 in 1 million, or the ground-level concentrations of non-carcinogenic TACs resulting in a hazard index (HI) greater than 1.0 for the

[5] As an example, the BAAQMD Multi-Pollutant Evaluation Method (MPEM) requires a 3 to 5 percent increase in regional ozone precursors to produce a material change in modeled human health impacts. Based on 2008 ROG and NO_X emissions in the Bay Area, a 3 to 5 percent increases equates to over 20,000 pounds per day of ROG and NO_X. See Tables 4.2-8, 4.2-11, and 4.2-13, showing unmitigated and mitigated construction and operational emissions estimates, each anticipating emissions significantly below a 3 to 5 percent increase.

[6] DPM is the primary TAC of concern for mobile sources; of all controlled TACs, emissions of DPM are estimated to be responsible for approximately 70 percent of the total ambient TAC risk (California Air Resources Board 2000). Given the risks associated with DPM, tools and factors for evaluating human health impacts from project-generated DPM have been developed and are readily available. Conversely, tools and techniques for assessing project-specific health outcomes as a result of exposure to other TACs (e.g., benzene) remain limited. These limitations impede the ability to evaluate and precisely quantify potential public health risks posed by TAC exposure.

MEI. BAAQMD has also adopted an incremental concentration-based significance threshold to evaluate receptor exposure to PM2.5 exhaust, where a "substantial" contribution is defined as PM2.5 exhaust (diesel and gasoline) concentrations exceeding 0.3 $\mu g/m^3$.

With respect to asbestos, which is a TAC, there are no quantitative thresholds related to receptor exposure. However, BAAQMD requires the demolition or renovation of asbestos containing building materials to comply with the limitations of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations as listed in the Code of Federal Regulations.

Localized Carbon Monoxide

BAAQMD considers localized CO emissions to result in significant impacts if concentrations exceed CAAQS (Table 4.2-4). The air district has adopted screening criteria that provide a conservative indication of whether project-generated traffic will cause a potential CO hot spot. BAAQMD (2011b) indicates that if the screening criteria are not met, a quantitative analysis through site-specific dispersion modeling of project-related CO concentrations would not be necessary and the project would not cause localized exceedances of CO CAAQS.

Screening criteria adopted by BAAQMD include quantitative criteria based on the number of additional vehicles added to affected intersections. These quantitative metrics were established based on local modeling and provide a conservative estimate for the maximum number of vehicles that can be added to an intersection without an exceedance of the CO CAAQS. BAAQMD CO screening criteria are summarized below.

1. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
2. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).
3. The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.

Supplemental Odor Guidance

BAAQMD (2012b) and ARB (2005) have identified several types of land uses as being commonly associated with odors, such as landfills, wastewater treatment facilities, and animal processing centers. BAAQMD's CEQA Guidelines recommend that plan-level analyses identify the location of existing and planned odor sources and include policies to reduce potential odors impacts in the plan area.

METHODOLOGY AND ASSUMPTIONS

Impacts of the Proposed Project on air quality and criteria pollutant emissions from construction and operations were assessed and quantified using standard and accepted software tools, techniques, and emission factors. The primary assumptions and key methods used to quantify emissions and estimate potential impacts are described below. Model inputs and calculation files are provided in Appendix B, *Air Quality and Greenhouse Gas Data*.

This analysis provides a program-level overview of construction and operational emissions that could occur with buildout of the Proposed Project. Subsequent project-level environmental review, including quantification of construction criteria pollutant emissions, would be required during the processing of individual applications for future projects. While the proposed BVSP is encompassed within the proposed General Plan, both plans are analyzed and presented separately in order to facilitate future project-level analyses to tier from either plan.

As discussed in Chapter 3, "Project Description," the proposed General Plan, BVSP, and CAP together constitute the Proposed Project analyzed in this Draft EIR. Unlike the General Plan and BVSP, the CAP does not control land use development; rather, it is a policy-based comprehensive strategy for reducing the City's GHG emissions. Therefore, the focus of this analysis is emissions that would result from net new development under the General Plan and BVSP. Where policies proposed under the CAP would contribute to reducing estimated emissions, these effects are noted in the analysis.

General Plan

Construction Emissions

Land uses that could be developed under the proposed General Plan would generate construction-related emissions from mobile and stationary construction equipment exhaust, employee and haul truck vehicle exhaust, dust from land clearing, and application of architectural coatings. Buildout would occur over an extended period of time beginning in 2018, depending on local economic conditions, market demand, and other financing considerations. While it is not possible to develop a refined construction inventory without specific project-level details,[7] the air quality impacts from construction of development that would be supported by the proposed General Plan were estimated based on general land use assumptions and the California Emissions Estimator Model (CalEEMod), version 2016.3.1. Net new development supported by the proposed General Plan was averaged over the 17-year buildout period (2018-2034) assuming reasonably foreseeable buildout under the proposed General Plan. A single construction year from this scenario was analyzed as a representative year of construction under the proposed General Plan. Emissions from ongoing demolition were estimated assuming a plan-wide average of 10 percent of existing development would be demolished over the buildout period (79,544 square feet per year) (Martin pers. comm.). Model defaults for all other assumptions were conservatively assumed since specific details for individual projects are not available for this program-level analysis.

[7] Project-level information includes details such as the size and scale of the project to be constructed, construction schedule, equipment fleet, construction worker crew estimates, and demolition and grading quantities.

Table 4.2-6 shows the net increase in land uses that are estimated to result from implementation of the proposed General Plan. The information provided in Table 4.2-6 was used for model inputs to calculate the net increase in emissions associated with the Proposed Project. Please refer to Appendix B for the CalEEMod output files.

Table 4.2-6. Construction Assumptions for General Plan Development through 2035

Land Use Type	*Assumption*[1]
Single Family/Townhome/Multifamily	540 units
Apartment	830 units
Restaurants/Entertainment	97,160 square feet
Strip Mall/Service/Retail	737,960 square feet
Office	157,210 square feet
Industrial/Manufacturing	44,030 square feet
University/Education	302,440 square feet
Government Civic	231,730 square feet
General Light Industry	65,150 square feet
Arena/Public Facilities/Recreation	17,650 square feet
Park	28,530 square feet

Source: Simundza pers. comm.

Note:

1. Assumptions from the CalEEMod modeling run have been rounded to nearest 10. Refer to Appendix B for additional information.

Operational Mobile Source Emissions

Air quality impacts from motor vehicles operating within the General Plan area were evaluated using Caltrans' CT-EMFAC2014 emissions model (version 6.0) and vehicle miles traveled (VMT) provided by Kittelson & Associates, the traffic engineers (Stefanakis pers. comm.). Daily VMT data for existing (2013) and buildout (2035) year conditions were provided with and without the proposed General Plan. VMT data for the proposed General Plan account for trip reductions achieved by proposed policies that increase proximity to transit and mixed-use design. VMT for all analysis conditions were apportioned into 5 mile per hour (mph) speed bins based on regional speed profile data provided by MTC (Brazil pers. comm.).

Criteria pollutants were calculated by multiplying the VMT estimates by the appropriate emission factors provided by CT-EMFAC2014. Please refer to Appendix B for the CT-EMFAC2014 emission factors and traffic data utilized in this analysis.

Operational Area and Energy Source Emissions

Area and energy (natural gas) emissions were estimated using CalEEMod, version 2016.3.1. The primary area source of criteria pollutants is hearth (e.g., natural gas fireplaces) usage, but emissions are also generated by landscape maintenance equipment and the repainting of buildings. Energy sources include the combustion of natural gas for building heating and hot water. Emissions were

quantified for existing (2013) and buildout (2035) conditions with and without the proposed General Plan based on current and anticipated land uses. The modeling accounts for natural gas reductions achieved by adoption of mandatory CALGreen Tier 1 energy performance standards. CalEEMod defaults were assumed, with the exception of wood burning stoves and fireplaces, which were assumed to be prohibited for all new development under the proposed General Plan per BAAQMD Regulation 6, Rule 3. Please refer to Appendix B for the land use assumptions and CalEEMod output files.

Carbon Monoxide Hot-Spots

Increased traffic in the plan area may contribute to localized increases in CO, known as CO "hot-spots". As discussed above, BAAQMD has adopted screening criteria that provide a conservative indication of whether traffic volumes will cause a potential CO hot-spot. Traffic data provided by the project engineers indicates that no intersections in the plan area would exceed BAAQMD's screening level of 24,000 vehicles per hour (Stefanakis pers. comm.). However, traffic volumes in 2035 both with and without the proposed General Plan at the intersection of Ralston Avenue/El Camino Real would violate the established LOS standard in the applicable congestion management plan (CMP) (Boardman pers. comm.). Accordingly, this intersection fails BAAQMD's screening criteria and additional analysis of CO hot-spots through dispersion modeling is warranted to determine whether this increased traffic may contribute to a CO hot-spot.

CO concentrations at Ralston Avenue/El Camino Real were analyzed using the ARB's EMFAC2014 emissions factor model and CALINE4 dispersion model. Receptors were placed 3 meters from the traveled way and a standard receptor elevation of 1.8 meters was used (Garza et al. 1997). Worst-case wind angles and meteorological conditions were modeled to estimate conservative CO concentrations at each receptor. Maximum monitored 1- and 8-hour CO values between 2013 and 2015 (see Table 4.2-1) were averaged to obtain background concentrations that account for sources of CO not included in the modeling. Eight-hour modeled values were calculated from the 1-hour values using a persistence factor of 0.7.

Belmont Village Specific Plan

Construction Emissions

Air quality impacts from construction of land uses supported by the BVSP were evaluated using the methods described above for the proposed General Plan. Similar to the proposed General Plan, emissions for a representative year of construction were estimated using CalEEMod defaults since project-level construction details are not currently available. Note that emissions from ongoing demolition were estimated assuming a plan-wide average of 51 percent of existing development would be demolished over the buildout period (21,318 square feet per year) (Simundza pers. comm.). Table 4.2-7 shows the net increase in land uses that are estimated to result from implementation of the BVSP. The information provided in Table 4.2-7 was used for model inputs to calculate the net increase in emissions associated with the Proposed Project. Please refer to Appendix B for the CalEEMod output files.

Table 4.2-7. Construction Assumptions for Specific Plan Development through 2035

Land Use Type	*Assumption*
Single Family/Townhome/Multifamily	150 units
Apartment	430 units
Strip Mall/Service/Retail	79,380 square feet
Restaurants/Entertainment	28,490 square feet
Office/Industrial	234,330 square feet
Arena/Public Facilities/Recreation	2,290 square feet
Park	28,530 square feet

Source: Simundza pers. comm.

Note:

1. Assumptions from the CalEEMod modeling run have been rounded to nearest 10. Refer to Appendix B for additional information.

Operational Mobile Source Emissions

Air quality impacts from motor vehicles operating within the BVSP Area were evaluated using the methods described above for the proposed General Plan. The analysis accounts for trip reductions achieved by BVSP policies that increase proximity to transit and mixed-use design. Please refer to Appendix B for the CT-EMFAC emission factors and traffic data utilized in this analysis.

Operational Area and Energy Source Emissions

Air quality impacts from operational area and energy (natural gas) sources associated with buildout of the BVSP were evaluated using the methods described above for the proposed General Plan. Please refer to Appendix B for the land use assumptions and CalEEMod output files.

Carbon Monoxide Hot-Spots

All intersections except Ralston Avenue/El Camino Real within the BVSP Area would meet BAAQMD's CO screening criteria. CO concentrations at Ralston Avenue/El Camino Real were modeled using the EMFAC2014 emission factor model, CALINE4 dispersion model, and the assumptions described above for the proposed General Plan.

IMPACT SUMMARY

The Proposed Project (consisting of the proposed General Plan, the BVSP, and the proposed CAP) would not conflict with the BAAQMD's *2010 Clean Air Plan*. Each plan includes numerous polices that would support the primary goals of the *2010 Clean Air Plan*, including attainment of ambient air quality standards. The proposed General Plan and BVSP policies also incorporate all applicable control measures outlined under the *2010 Clean Air Plan*, and would not hinder their implementation. Further, with implementation of the proposed General Plan and proposed CAP (another element of the Proposed Project), per capita emissions will be lower than forecasted for the Planning Area under the *2010 Clean Air Plan*, which will further help the region attain the ambient air quality standards.

While the proposed General Plan and the BVSP would be consistent with BAAQMD's regional air quality strategy, individual development projects may still generate construction and operational emissions in excess of BAAQMD's project-level thresholds. Mitigation Measures AQ-1 through AQ-4 would reduce construction-related emissions, and Mitigation Measure AQ-5 would address operational-related emissions. Implementation of the comprehensive suite of proposed General Plan and BVSP policies would also reduce the severity of growth-oriented criteria pollutants by reducing VMT, encouraging transit, fostering bicycle and pedestrian infrastructure, and supporting sustainable land use patterns, including mixed-use design and increased density. However, as described below, even with implementation of the proposed General Plan and BVSP policies and the recommended mitigation measures, impacts from short-term construction and long-term operation would remain significant and unavoidable. These emissions would also result in a cumulatively considerable air quality impact within the SFBAAB.

The proposed General Plan and BVSP may expose sensitive receptors to substantial TAC concentrations. Based on an inventory of existing stationary, roadway, and railway sources, several locations within the planning areas include sources currently in excess of BAAQMD's project-level and cumulative health risk thresholds. The proposed General Plan and BVSP both include policies to minimize risks to future residents. Operation of new stationary sources developed under the plans would be subject to the permit authority of the BAAQMD, which prohibits sources with health risks in excess of air district thresholds. Construction activities of future development may expose existing and future receptors to significant health risks. Mitigation Measures AQ-1 and AQ-2 would reduce construction-related emissions, and Mitigation Measure AQ-6 would provide a project-level evaluation of construction-related health risks from future projects within 1,000 feet of sensitive receptors. Despite these measures, there may be instances where project-specific conditions preclude the reduction of health risks below adopted thresholds, resulting in a significant and unavoidable impact.

Neither demolition activities nor increased traffic associated with the proposed General Plan and BVSP would expose receptors to significant pollutant concentrations. Specifically, demolition activities would be required to comply with BAAQMD Regulation XI, Rule 11-2 for the control of asbestos containing material (ACM). CO screening and modeling indicate that traffic volumes under the proposed General Plan and BVSP would not result in CO concentrations in excess of the state or federal 1- or 8-hour CO standards.

Development under the proposed General Plan and BVSP would not create objectionable odors affecting a substantial number of people. Impacts associated with odors during construction and operation would be less than significant.

IMPACTS AND MITIGATION MEASURES

Impact

4.2-1 Implementation of the Proposed Project would not conflict with or obstruct implementation of the applicable air quality plan. ***(Less than significant)***

General Plan and Belmont Village Specific Plan

The CAA requires that a SIP or an air quality control plan be prepared for areas with air quality violating the NAAQS. The SIP sets forth the strategies and pollution control measures that states will use to attain the NAAQS. The CCAA requires attainment plans to demonstrate a 5 percent per year reduction in nonattainment air pollutants or their precursors, averaged every consecutive 3-year period, unless an approved alternative measure of progress is developed. Air quality attainment plans (AQAP) outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date. The current AQAP for the SFBAAB is the *2010 Clean Air Plan*.

According to BAAQMD's (2012b) CEQA Guidelines, the determination of *2010 Clean Air Plan* consistency should consider the following for plan-level analyses:

1. Does the plan support the primary goals of the *2010 Clean Air Plan*?
2. Does the plan include applicable control measures from the *2010 Clean Air Plan*?
3. Does the plan disrupt or hinder implementation of any *2010 Clean Air Plan* control measure?

Each of these questions are addressed below for the proposed General Plan and BVSP.

Support of 2010 Clean Air Plan Goals

The primary goals of the *2010 Clean Air Plan* are to attain air quality standards, reduce population exposure and protect public health, and reduce GHG emissions and protect the climate. The proposed General Plan includes numerous policies in the Land Use, Conservation, and Circulation elements that will support regional attainment of the CAAQS and NAAQS. For example, several land use policies promote alternative modes of transportation, such as walking and biking, and as well as mixed-use design and urban infill. Policies in the Conservation element support sustainable building design, reduction in GHG emissions, and coordination at the local and regional levels to improve local and regional air quality. Circulation policies further support the maintenance and expansion of the transportation network to enhance connectivity, accessibility, and safety. Together, these policies will lessen the severity of growth-oriented criteria pollutants by reducing VMT, encouraging transit, fostering bicycle and pedestrian infrastructure, and supporting sustainable land use patterns, including mixed-use design and increased density. With implementation of the proposed General Plan and proposed CAP (a part of the Proposed Project), per capita emissions in 2035 will be lower than previously forecasted for 2035 for the Planning Area under the *2010 Clean Air Plan*, which would not have assumed the diverse suite of sustainability policies included in the General Plan Update. Reductions in per capita emissions will further help the region attain the ambient air quality standards even if overall mass emissions increase as a result of population and employment growth.

The proposed General Plan and CAP also include policies to protect public health and reduce GHG emissions. Specifically, policy 5.10-2 requires new development near TAC sources be designed to minimize any potential health risks to adjacent existing receptors. Strategies that reduce VMT and energy consumption will also lower public health effects of adverse air quality since they will reduce overall emissions generated by development supported by the proposed General Plan. The CAP includes energy, transportation and land use, solid waste, and adaptation measures that seek to

reduce GHG emissions from community activities and protect the climate. The City's CAP is consistent with the BVSP and regulations such as AB 32 and SB 375, as discussed further in Section 4.6 of this EIR, "Greenhouse Gases."

Similar to the proposed General Plan, the BVSP includes policies in the Land Use, Mobility, and Infrastructure and Public Services elements that support the primary goals of the *2010 Clean Air Plan*. For example, land use policies support high-density development that would encourage active ground floor uses and maximize foot traffic. Mobility and infrastructure and public services policies support investments in transportation infrastructure for all modes of transportation. Design guidelines in the BVSP also outline how new development in the Belmont Village Planning Area should take place to further support BVSP policies. With respect to public health, Policies 6.4-2 through 6.4-6 outline requirements for projects within certain distances of existing stationary, roadway, and railway sources to install indoor air quality equipment, such as enhanced air filters or equivalent mechanisms, to minimize health risks to future residents. The policies described above would also reduce GHG emissions, consistent with the City's CAP.

Based on the above analysis, the Proposed Project (consisting of the proposed General Plan, BVSP, and CAP) would support the primary goals of the *2010 Clean Air Plan*. Relevant proposed General Plan, BVSP, and CAP policies are described further below.

Applicable Control Measures

The *2010 Clean Air Plan* contains 55 control measures aimed at reducing air pollution in the SFBAAB. Appendix C, *Clean Air Plan Control Measure Review*, indicates which of the 55 control measures are applicable to the proposed General Plan and BVSP and how the plans comply with each. Of the 55 measures, a total of 35 are applicable to the proposed General Plan and BVSP. As detailed in Appendix C, both plans include polices and/or measures from the *2010 Clean Air Plan* that incorporate the primary purpose of each control measure.

Disrupt or Hinder Implementation of 2010 Clean Air Plan Control Measures

As discussed above, the proposed General Plan and BVSP include numerous policies that promote mixed-use development, alternative modes of transportation, renewable energy, and sustainable land use design. Neither the proposed General Plan nor the BVSP would cause the disruption, delay, or otherwise hinder implementation of any applicable control measure from the *2010 Clean Air Plan*. Rather, the plans would support and facilitate their implementation. For example, proposed General Plan Policy 3.2-3 would maintain and expand transit and active transportation networks throughout the Planning Area. Similarly, CAP strategy TL1 would establish a smart growth policy that prioritizes transit. Accordingly, neither plan would preclude an extension of transit or active transit. Similarly, the plans also do not propose excess parking restrictions or other requirements that would disrupt or hinder implementation of any applicable *2010 Clean Air Plan* control measure related to parking. The proposed General Plan and BVSP each contain parking policies to reduce motor vehicle travel, including proposed General Plan policies 3.8-1 and 5.10-6, as well as BVSP policy 3.5-1. Section 8A.7 of the Phase I Zoning regulations, applying citywide, requires implementation of Transportation Demand Management measures for all multi-unit residential projects greater than 10 units, all nonresidential projects greater than 10,000 square feet, and all nonresidential changes in use or operational characteristics in buildings larger than 10,000 square feet that would result in a net increase in average daily vehicle trips of 10 percent or greater. Section

31.7 of the Belmont Village Zoning applies these same requirements to projects within the BVSP area.

Based on the above analysis, the Proposed Project (which consists of the proposed General Plan, BVSP, and proposed CAP) would support implementation of the *2010 Clean Air Plan*. Accordingly, adoption of the CAP and development under the proposed General Plan and BVSP would not fundamentally conflict with the *2010 Clean Air Plan* and would have a less than significant air quality impact.

Proposed General Plan Policies that Would Reduce the Impact

2.1-2 Coordinate land use and transportation planning to ensure that land use patterns and intensities can be supported by and are accessible to the transportation network, including pedestrian and bicycle facilities.

2.3-2 Encourage higher density residential uses located in close proximity to commercial services, employment opportunities, and major transportation corridors and facilities.

2.5-6 Enhance walkability and pedestrian orientation of the Village to create an identity, improve the atmosphere, and improve access to and utilization of transit, in accordance with the Belmont Village Specific Plan.

2.7-2 Promote enhanced accessibility to commercial and employment areas, including walking and bicycling facility improvements.

2.13-6 Enhance walkability on a citywide scale by improving or adding sidewalks, landscaping, benches, wayfinding signage, public art, and pedestrian-scaled lighting, where appropriate and feasible.

2.15-1 Participate with other cities in the county and across the region in working towards solution of regional land use and transportation planning issues, including through partnership with the Association of Bay Area Governments, the Metropolitan Transportation Commission, and the San Mateo City/County Association of Governments.

3.1-2 Make Complete Streets practices a part of Belmont's planning, design and operation of its circulation network, acknowledging that a flexible and context-sensitive approach to design will result in each roadway serving most users and the roadway network as a whole serving all users.

3.1-3 Understand the unique needs for connectivity between neighborhoods and implement various strategies to promote Complete Streets in and between all neighborhoods.

3.1-4 Provide a transportation system that is well-connected within the city and to areas outside the city.

3.1-5 Require new development and redevelopment projects to construct or pay their fair share toward improvements for all travel modes to provide and enhance connectivity to existing transportation facilities.

3.2-1 Promote energy efficiency and accommodate new and improve technology, such as autonomous vehicles, in meeting transportation needs.

3.2-2 Look for ways to partner with ride-sharing services as a means to reduce single-occupancy vehicle trips, reduce the need for car ownership, and cover service gaps in the public transportation system.

3.2-3 Maintain and expand transit and active transportation networks that connect neighborhoods with key destinations to encourage travel by non-automobile modes while also improving public health.

3.2-4 Support thoughtful and appropriate land use locations and densities with development or redevelopment in Belmont that promote alternatives to travel via single-occupant vehicles.

3.2-5 Comply with the adopted Complete Streets Policy of the City of Belmont.

3.4-3 Seek innovative solutions to addressing traffic congestion and barriers to mobility that are due, in part, to Belmont's unique geography.

3.4-10 Support the installation of vehicle traffic-calming measures to ensure bicycle and pedestrian safety on roadways where the street typology prioritizes pedestrian and bicycle mobility, and especially on hillside streets.

3.5-5 Maintain and encourage use of the existing system of main and neighborhood bike routes. Incorporate bike lanes or pathways into the circulation system of any new subdivision, consistent with the citywide bike and trails network.

3.5-8 Support and provide bicycle and pedestrian connections to commercial and employment areas to enhance accessibility.

3.5-9 Prepare the Comprehensive Pedestrian and Bicycle Plan for on-street and off-street bicycle and pedestrian facilities in the city.

3.5-13 Support additional pedestrian and bicycle crossings across the railroad tracks in Belmont to enhance connectivity.

3.5-14 Prioritize transportation improvements that improve pedestrian and bicycle safety for students traveling to and from schools.

3.5-15 Ensure that new development projects provide bicycle and pedestrian improvements to facilitate the implementation of adopted Safe Routes to School plans.

3.5-16 Locate sidewalks, pedestrian paths, and appropriate crosswalks to facilitate access to all schools and other areas with significant pedestrian traffic. Whenever feasible, pedestrian paths shall be developed to allow for unobstructed pedestrian flow within a neighborhood.

3.6-1 Encourage the use of park-and-ride and shuttle services.

3.6-2 Encourage (or require, for large employment centers with high projected trip generate rates) businesses to implement Transportation Demand Management Programs with an emphasis on connecting and sharing the service with other businesses in the City and region, such as commuter buses, carpools, and other forms of private transit, especially in conjunction with major new industrial or commercial development.

3.6-3 Ensure that major new development is adequately served by transit.

3.7-1 Ensure that adequate transit service facilities are provided in Belmont, including bus turn-outs along arterials when needed, and bus stop amenities including, but not limited to, lighted shelters, benches, and route information signs.

3.7-2 Prioritize improvements to service that have the potential to alleviate congestion on Belmont's most impacted roadways and to extend service to areas of the community where no service currently exists.

3.7-3 Encourage SamTrans and other public transit providers to provide service on regular schedules along El Camino Real, arterial streets, and, as possible, major collectors; support these transportation services to increase the mobility of seniors, the disabled, and others who depend on public transportation.

3.7-4 Design streets and rights-of-way to accommodate and support safe and efficient bus operations.

3.7-6 Support improvement and frequency of north-south mass transit service by advocating for increased service at the Belmont Caltrain station as systemwide improvements are made, and working with Samtrans to implement service improvements (such as transit signal priority and rapid bus service) on El Camino Real.

3.7-7 Prioritize El Camino Real and railroad rights-of-way as major intercity transportation corridors to accommodate mass transit as well as automobile, bus, and bicycle movement.

3.8-1 Proactively manage parking in Carlmont Village and the Belmont Village PDA using innovative parking techniques, implementing effective TDM programs to reduce parking demand, supporting shared parking and innovative pricing policies, and considering other means to efficiently manage parking supply and demand.

5.3-8 Use native or drought-resistant vegetation in landscaping on City-owned property, and encourage private property owners to use native or drought-resistant vegetation in landscaping on private property.

5.10-1 Coordinate air quality planning efforts with other local, regional, and State agencies.

5.10-2 Require that new development with sensitive uses that is located adjacent to sources of toxic air contaminants (TAC) be designed to minimize any potential health risks.

5.10-4 Support land use, transportation management, infrastructure, and environmental planning programs that reduce vehicle emissions and improve air quality.

5.10-6 Ensure compliance with the most current Bay Area Clean Air Plan by implementing the Plan's recommended Transportation Control Measures (TCMs).

5.11-1 Adopt a Climate Action Plan that incorporates a Greenhouse Gas Emissions Reduction Plan, which quantifies current and anticipated future emissions and focuses on feasible actions the City can take to minimize the adverse impacts of General Plan implementation on climate change and air quality.

Proposed Phase I Zoning Regulations that Would Reduce the Impact

Section 8A.7 of the Phase I Zoning regulations, applying citywide, requires implementation of Transportation Demand Management measures for all multi-unit residential projects greater than 10 units, all nonresidential projects greater than 10,000 square feet, and all non-residential changes in use or operational characteristics in buildings larger than 10,000 square feet that would result in a net increase in average daily vehicle trips of 10 percent or greater.

Proposed Belmont Village Specific Plan Policies that Would Reduce the Impact

2.1-1 Allow for a flexible mix of uses, with a variety of uses at the ground floor as well as on upper stories, except where Active Ground Floor Uses are required, in which case only active uses are permitted at the ground floor as described in Section 2.4 and Table 3-1 of the Village Zoning regulations. Allow commercial and residential uses on upper stories.

2.1-3 Develop the area around Hill Street with a mix of residential, retail, employment, and entertainment uses to serve as a gateway and connection to the Caltrain station.

2.1-5 Encourage pedestrian-friendly retail anchors and high-traffic establishments to locate throughout the Village Core at intersections and gateways in an effort to enhance the image recognition of the shopping district and maximize foot traffic.

3.1-2 Pursue Complete Streets transportation infrastructure improvements needed to accommodate growth and land use changes proposed in Belmont Village.

3.2-1 Develop the "Belmont Village Loop" as a cohesive and safe active transportation loop for pedestrians and bicyclists through the Village and around its perimeter.

3.2-2 Improve facilities to encourage more bicycle and pedestrian travel.

3.2-8 Add Class III bicycle signage and supporting facilities to Fifth Avenue between Broadway and O'Neill Avenue.

3.2-10 Enhance El Camino Real to better serve as a Boulevard and major connection for all modes of transportation, including pedestrians and bicyclists.

3.2-18 Ensure that Masonic Way remains an important bicycle connection, either through retention of existing Class II bike lanes or replacement with Class III signage and sharrows. The appropriate bicycle facility type should be based on existing and projected bicycle volumes, safety considerations, and any changes to roadway design that accompany potential redevelopment of properties fronting the corridor.

3.2-19 Enhance Ralston Avenue as an east-west Boulevard to better serve as a major connection for all modes of transportation, including pedestrians and bicyclists.

3.2-20 Extend Emmett Street as a Main Street from Sixth Avenue to the proposed Twin Pines Park Class I path to create a direct connection between the Civic Center and the Village Core.

3.2-27 Improve east-west connectivity and accessibility by providing a new crossing for pedestrians and bicyclists across El Camino Real at Emmett Street.

3.2-29 Improve the Sixth Avenue and Ralston Avenue intersection to facilitate bicycle and pedestrian circulation and safety.

3.2-31 Improve the intersection at Ralston Avenue and El Camino Real to enhance bicycle and pedestrian access.

3.2-32 Upgrade all crosswalks to have high-visibility crosswalk markings at the intersection of Ralston Avenue and Old County Road, and add crossbike markings to the west leg to improve visibility of cyclists.

3.2-33 Improve the pedestrian crossing at Ralston Avenue and Elmer Street to increase the visibility of pedestrians crossing the street.

3.2-35 Reconfigure the intersection of Ralston Avenue ("Little Ralston" Avenue) between Granada Street and Hiller Street to reduce traffic volumes and provide crossing improvements for pedestrians and bicyclists.

3.2-36 Improve crossing at Ralston Avenue and O'Neill Avenue to enhance pedestrian and bicyclist connectivity along the Belmont Village Loop.

3.3-1 Create inviting bus stops with benches, shelters, pedestrian-scaled lighting, and other amenities at bus stops within the Planning Area.

3.3-3 Improve access to Caltrain for all transportation modes.

3.4-1 Implement Transportation Demand Management for developments in the Planning Area, either through a set of guidelines, an incentive/community benefits program, or through an ordinance. [See also Belmont Village zoning regulations Section 31.7, Transportation Demand Management and specifically subsection 31.7.2, Applicability, for TDM requirements for certain projects within the BVSP area.]

3.5-1 Minimize the number of parking spaces in the Village Core to the extent feasible.

5.4-1 Apply CALGreen standards to both residential and non-residential buildings, which the City adopts triennially, and mandate CALGreen Tier 1 energy performance (if adopted by the City).

5.4-2 Create and implement incentives to improve energy efficiency in new development and retrofits, such as for the installation of energy efficient solar panels and hot water systems.

6.4-2 Require new residential projects and other new sensitive receptors such as schools, daycares, nursing and retirement homes located within 1,000 feet of Highway 101, El Camino Real, or the Caltrain tracks to install indoor air quality equipment, such as enhanced air filters (air filters rated at a minimum efficiency reporting value (MERV) 13 or higher) or equivalent mechanisms, to minimize health risks for future residents.

6.4-3 Require proponents of projects within 100 feet of existing hazardous materials case sites or TAC stationary sources, or 300 feet of gas stations or perc dry cleaners, to investigate 1) the site's health risk, 2) applicable Air District risk standards, 3) use compatibility at the location in question (some kinds of uses might be at lower risk than others), and 4) potential feasible design-related risk mitigation measures. If the investigation results show that the health risk exceeds the Air District standards for toxic air contaminants, require project proponents to include design-related risk mitigation measures, such as upgraded ventilation systems with high efficiency filters (air filters rated at a minimum efficiency reporting value (MERV) 13 or higher) or equivalent mechanisms, to minimize health risks for future residents. Project proponents are expected to check Air District databases for the latest data on stationary TAC sources and risk standards. Project proponents must provide evidence to the City of consultation with the Air District and the RWQCB in making refinements to project designs to reduce applicable hazardous materials and/or toxic air contaminant risk.

6.4-4 When project sites exceed TAC risk thresholds, require any projects that are developed in phases over several years to build residential units and/or sensitive land uses that are closest to the TAC source at the latest date possible.

6.4-5 Require development projects with sensitive receptors, such as residences, senior and nursing homes, schools, daycare facilities, and hospitals, that are located within 300 feet of TAC stationary sites containing older generators to install air filters rated at a minimum efficiency reporting value (MERV) 13 or higher.

6.4-6 Encourage existing uses to retrofit generators with Best Available Control Technology to meet ARB's Tier 4 emission standards. Encourage the use of zero emission back-up power.

6.4-7 Implement the recommendations in the City's transportation studies, such as those in the Ralston Avenue Corridor Study, to ease congestion, improve multi-modal mobility, and reduce traffic-generated exhaust.

6.4-8 Consistent with the goals and policies in the General Plan's Land Use Element and development patterns shown on the General Plan Land Use Diagram, promote mixed-use development in the Village and along the El Camino Real Corridor that is supportive of alternative modes of transportation (public transit, walking, bicycling, etc.) and lessens the need for and length of vehicle trips.

6.4-9 Require new large commercial projects to prepare a loading plan aimed to minimize truck idling and reduce diesel particulate emissions related to truck loading.

6.4-10 Support citywide initiatives to target purchase of new or conversion of existing government vehicles to more efficient vehicles, encourage staff to drive minimally and efficiently, and mandate government operations idling policy at all municipal buildings in the Village.

Proposed Climate Action Plan Measures that Would Reduce the Impact

EC1 Adopt CALGreen for non-residential buildings triennially. Work to mandate achievement of CALGreen Tier 1 energy performance.

EC2 Update CALGreen for residential buildings triennially. Work to mandate achievement of CALGreen Tier 1 energy performance.

EC4 Provide or encourage residential energy audits and retrofits. Leverage existing rebates/add additional rebates for energy efficient retrofits.

EC5 Promote and assist with marketing and outreach for PG&E energy efficiency and demand response programs for the nonresidential sector. Leverage existing rebates/add additional rebates for energy efficient retrofits.

EM3 Mandate all new municipal buildings achievement of CALGreen Tier 1 energy performance.

EM5 Participate in San Mateo County Energy Watch and leveraged benchmarking to identify EE audit and retrofit projects and track energy performance.

A1 Establish voluntary program that allows businesses to brand themselves as green by following sustainable practices.

TL1 Establish a Smart Growth Policy that prioritizes infill, higher density, transit-oriented and mixed-use development.

TL2 Remake urban landscape to ensure Complete Streets, with bike lanes, bike parking, traffic calming, beautification, etc. Continue to support Paper Trails and Safe Routes to School to encourage walking.

TL3 Incentivize City Car Sharing Companies to open pods in town. Explore Bike Share program.

TM1 Prioritize purchase of efficient vehicles and alternative fuel vehicles (including off-road equipment). Maintain existing vehicles for optimum mileage. Encourage staff to drive minimally and efficiently. Establish government operations idling policy

TM2 Establish alternative work schedules and telecommuting to reduce employee commute.

TM4 Target purchase of new or conversion of existing government vehicles to more efficient vehicles.

Mitigation Measures

None required.

Impact

4.2-2 Implementation of the Proposed Project would violate an air quality standard and contribute substantially to an existing or projected air quality violation during construction. (*Significant and unavoidable*)

General Plan

Construction associated with projects under the proposed General Plan would result in the temporary generation of ozone precursors (ROG, NO_X), CO, and particulate matter emissions that could result in short-term impacts on ambient air quality in the planning area. Emissions would originate from mobile and stationary construction equipment exhaust, employee and haul truck vehicle exhaust, land clearing, demolition, architectural coatings, and asphalt paving. Construction-related emissions would vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, number of personnel, wind and precipitation conditions, and soil moisture content.

By its nature, the proposed General Plan does not propose any specific development projects, but construction would occur as buildout of Belmont proceeds under the proposed General Plan. The precise level of construction activities that buildout would entail is currently unknown. In addition, changes in the land use designations of certain areas could result in more intense construction activities under the proposed General Plan than would take place under the current General Plan. Because such details of future construction under the proposed General Plan are not known, it is difficult to accurately quantify construction-related emissions. Accordingly, a high-level analysis was performed based on the average annual amount of development that may occur under the proposed General Plan, assuming an equal amount of construction over the 17-year buildout period. This analysis was undertaken to present the potential magnitude of construction emissions and is provided as a theoretical example. Table 4.2-8 summarizes the average annual unmitigated maximum daily construction emissions associated with a representative year of construction.

Table 4.2-8. Estimated Average Annual Unmitigated Maximum Daily Construction Emissions from the Proposed General Plan (pounds per day)

Phase	*ROG*	*NOx*	*CO*	*PM10*			*PM2.5*		
				Exhaust	*Dust*	*Total*	*Exhaust*	*Dust*	*Total*
Demolition	4	45	25	2	4	6	2	1	3

Site Preparation	5	48	23	3	18	21	2	10	12
Grading	5	60	36	3	9	11	2	4	6
Building Construction	3	27	21	2	1	2	1	<1	2
Paving	2	18	15	1	<1	1	1	<1	1
Architectural Coating	120	2	5	<1	<1	<1	<1	<1	<1
Maximum Daily[1]	**139**	**199**	**122**	**10**	**33**	**42**	**9**	**15**	**24**
Threshold[2]	54	54	-	82	BMPs	-	54	BMPs	-
Exceed Threshold?	**Yes**	**Yes**	-	No	**Yes**	-	No	**Yes**	-

Notes:

1. Assumes construction of individual phases could occur concurrently throughout the year, consistent with CalEE-Mod defaults. Emissions were modeled under 2018 conditions, which is the earliest construction may occur under the proposed General Plan.
2. Source: BAAQMD 2011b. BAAQMD's project-level thresholds were developed to analyze emissions generated by a single project and so offer an extremely conservative evaluation of emissions from an entire general plan.

As shown in Table 4.2-8, emissions from individual phases and during concurrent construction may exceed BAAQMD's ROG and NO_X thresholds. BAAQMD also considers fugitive dust emissions significant without the application of standard best management practices (BMPs). The analysis assumes an equal amount of development would occur each year between 2017 and 2035. However, greater amounts of construction activity may occur during some years, and overlapping construction schedules from individual projects may result in greater emissions than those presented in Table 4.2-8. Conversely, some years may require fewer construction activities, and thus lower emissions than those summarized above. Nonetheless, the illustrative analysis indicates that the proposed General Plan would result in a potentially significant air quality impact from construction.

The predominate activity associated with the significant NO_X emissions is the operation of off-road equipment, whereas the predominate activity associated with the significant ROG emissions is the application of architectural coatings. Mitigation Measure AQ-1 requires Tier 4 engines and Mitigation Measure AQ-2 requires all off-road equipment utilize renewable diesel. These measures will reduce NOx and other criteria pollutants from off-road equipment. Mitigation Measure AQ-3 requires low-VOC paints be used to reduce ROG emissions from architectural coatings. Finally, Mitigation Measure AQ-4 outlines BAAQMD's required BMPs to control fugitive dust. Future projects would also be subject to proposed General Plan Policy 5.10-3, which would also help minimize short-term air quality impacts.

Table 4.2-9 summarizes the average annual maximum daily construction emissions with implementation of Mitigation Measures AQ-1 through AQ-4. The table demonstrates that implementation of Mitigation Measures AQ-1 through AQ-4 reduce the maximum daily emissions of ROG, PM10 and PM2.5 each to a less-than significant level, but buildout of the proposed General Plan would still exceed BAAQMD's NO_X threshold, resulting in a significant and unavoidable air quality impact.

Table 4.2-9. Estimated Average Annual Mitigated Maximum Daily Construction Emissions from the Proposed General Plan (pounds per day)[1]

Phase	ROG	NOx	CO	PM10			PM2.5		
				Exhaust	Dust	Total	Exhaust	Dust	Total
Demolition	1	22	24	1	2	3	1	<1	1
Site Preparation	1	16	20	1	8	9	1	5	5
Grading	2	26	32	1	4	5	1	2	3
Building Construction	1	16	19	1	1	2	1	<1	1
Paving	1	10	15	<1	<1	1	<1	<1	<1
Architectural Coating	11	1	2	<1	<1	<1	<1	<1	<1
Maximum Daily[2]	**16**	**91**	**114**	**3**	**16**	**19**	**3**	**7**	**10**
Threshold[3]	54	54	-	82	BMPs	-	54	BMPs	-
Exceed Threshold?	No	**Yes**	-	No	No	-	No	No	-

Notes:

1. Since Tier 4 engines may not be available for all off-road engines, Mitigation Measure AQ-1 was conservatively modeled assuming Tier 3 engines.
2. Assumes construction of individual phases could occur concurrently throughout the year, consistent with CalEEMod defaults. Emissions were modeled under 2018 conditions, which is the earliest construction may occur under the proposed General Plan.
3. Source: BAAQMD 2011b. BAAQMD's project-level thresholds were developed to analyze emissions generated by a single project and so offer an extremely conservative evaluation of emissions from an entire general plan.

Belmont Village Specific Plan

Similar to the proposed General Plan, future projects under the BVSP may result in short-term air quality impacts from construction activities. Specific construction scheduling and equipment details for individual projects are currently unknown. Accordingly, a high-level analysis was performed based on the average annual amount of development that may occur under the BVSP, assuming an equal amount of construction over the 17-year buildout period. Table 4.2-10 summarizes the average annual unmitigated maximum daily construction emissions associated with a representative year of construction.

Table 4.2-10. Estimated Average Annual Unmitigated Maximum Daily Construction Emissions from the Belmont Village Specific Plan (pounds per day)

Phase	ROG	NOx	CO	PM10			PM2.5		
				Exhaust	Dust	Total	Exhaust	Dust	Total
Demolition	4	40	23	2	1	3	2	<1	2
Site Preparation	5	48	23	3	18	21	2	10	12
Grading	3	31	17	2	7	8	1	3	5
Building Construction	3	26	20	2	1	2	1	<1	2
Paving	1	15	13	1	<1	1	1	<1	1
Architectural Coating	47	2	2	<1	<1	<0	<1	<1	<1
Maximum Daily[1]	**57**	**162**	**98**	**9**	**27**	**36**	**8**	**14**	**22**
Threshold[2]	54	54	-	82	BMPs	-	54	BMPs	-
Exceed Threshold?	**Yes**	**Yes**	-	No	**Yes**	-	No	**Yes**	-

Notes:

1. Assumes construction of individual phases could occur concurrently throughout the year, consistent with CalEEMod defaults. Emissions were modeled under 2018 conditions, which is the earliest construction may occur under the BVSP.
2. Source: BAAQMD 2011b. BAAQMD's project-level thresholds were developed to analyze emissions generated by a single project and so offer an extremely conservative evaluation of emissions from an entire general plan.

As shown in Table 4.2-10, emissions from individual phases and during concurrent construction may exceed BAAQMD's ROG and NO_X thresholds. Fugitive dust emissions would also be significant without the application of standard BMPs. As noted above for the proposed General Plan, greater or lesser amounts of construction activity may occur during some years, resulting in greater or fewer emissions than those presented in Table 4.2-10. Nonetheless, the illustrative analysis indicates that the BVSP would result in a potentially significant air quality impact from construction.

Mitigation Measures AQ-1 and AQ-2 will reduce NOx and other criteria pollutants from off-road equipment, whereas Mitigation Measures AQ-3 and AQ-4 will reduce fugitive ROG and dust emissions, respectively. Table 4.2-11 summarizes the average annual mitigated maximum daily construction emissions with implementation of Mitigation Measures AQ-1 through AQ-4. The table demonstrates that implementation of Mitigation Measures AQ-1 through AQ-4 reduce the maximum daily emissions of ROG, PM10 and PM2.5 each to a less-than-significant level, buildout of the BVSP would still exceed BAAQMD's NO_X threshold, resulting in a significant and unavoidable air quality impact.

Table 4.2-11 Estimated Average Annual Mitigated Maximum Daily Construction Emissions from the Belmont Village Specific Plan (pounds per day)[1]

Phase	ROG	NOx	CO	PM10			PM2.5		
				Exhaust	Dust	Total	Exhaust	Dust	Total
Demolition	1	18	22	1	1	1	1	<1	1
Site Preparation	1	16	20	1	8	9	1	5	5
Grading	1	13	17	<1	3	4	<1	2	2
Building Construction	1	15	18	1	1	1	1	<1	1
Paving	1	8	13	<1	<1	1	<1	<1	<1
Architectural Coating	4	2	2	<1	<1	<1	<1	<1	<1
Maximum Daily[2]	**8**	**72**	**93**	**3**	**13**	**16**	**3**	**6**	**9**
Threshold[3]	54	54	-	82	BMPs	-	54	BMPs	-
Exceed Threshold?	No	**Yes**	-	No	No	-	No	No	-

Notes:

1. Since Tier 4 engines may not be available for all off-road engines, Mitigation Measure AQ-1 was conservatively modeled assuming Tier 3 engines.
2. Assumes construction of individual phases could occur concurrently throughout the year, consistent with CalEEMod defaults. Emissions were modeled under 2018 conditions, which is the earliest construction may occur under the proposed General Plan.
3. Source: BAAQMD 2011b. BAAQMD's project-level thresholds were developed to analyze emissions generated by a single project and so offer an extremely conservative evaluation of emissions from an entire general plan.

Proposed General Plan Policies that Would Reduce the Impact

5.10-3 Ensure that construction and grading activities minimize short-term impacts to air quality by employing appropriate mitigation measures and best practices.

Proposed Belmont Village Specific Plan Policies that Would Reduce the Impact

There are no policies in the Belmont Village Specific Plan that relate to this topic.

Proposed Climate Action Plan Measures that Would Reduce the Impact

There are no strategies in the Climate Action Plan that relate to this topic.

Mitigation Measures

Mitigation Measure AQ-1: Require Tier 4 engines on Construction Equipment. All applicants proposing development of projects within Belmont shall require their contractors, as a condition of contract, to further reduce construction-related exhaust emissions by ensuring that all off-road equipment greater than 50 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities shall operate on an EPA-approved Tier 4 or newer engine. Exemptions can be made for specialized equipment where Tier 4 engines are not commercially available within 200 miles of the project site. The construction contract must identify these pieces of equipment, document their unavailability, and ensure that they operate on no less than an EPA-approved Tier 3 engine. ARB regulations will result in the percentage of Tier 4 engines increasing over the next several years.

Mitigation Measure AQ-2: Require Construction Fleet to Use Renewable Diesel. All applicants proposing development of projects within Belmont shall require their contractors, as a condition of contract, to reduce construction-related exhaust emissions by ensuring that all off-road equipment greater than 50 horsepower (hp) and operating for more than 20 total hours over the entire duration of construction activities shall operate on renewable diesel (such as Diesel high performance renewable). Renewable diesel is currently commercially available in San Francisco Bay Area.

Mitigation Measure AQ-3: Require Low-VOC Coatings during Construction. All applicants proposing development of projects within Belmont shall require their contractors, as a condition of contract, to reduce construction-related fugitive ROG emissions by ensuring that low-VOC coatings that have a VOC content of 10 grams/liter (g/L) or less are used during construction. The project applicant will submit evidence of the use of low-VOC coatings to BAAQMD prior to the start of construction.

Mitigation Measure AQ-4: Require Fugitive Dust Best Management Practices. All applicants proposing development of projects within Belmont shall require their contractors, as a condition of contract, to reduce construction-related fugitive dust by implementing BAAQMD's basic control measures at all construction and staging areas. The following measures are based on BAAQMD's current CEQA guidelines.

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) will be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material offsite will be covered.
- All visible mud or dirt track-out onto adjacent public roads will be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
- All vehicle speeds on unpaved roads, driveways, or driving surfaces shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved will be completed as soon as possible. Building pads will be laid as soon as possible after grading unless seeding or soil binders are used.
- Post a publicly visible sign with the telephone number and the name of the person to contact at the lead agency regarding dust complaints. This person will respond and take corrective action within 48 hours. The phone number of the District will also be visible to ensure compliance.

Impact

4.2-3 Implementation of the Proposed Project would violate an air quality standard and contribute substantially to an existing or projected air quality violation during operation. (*Significant and unavoidable*)

General Plan

Buildout of the proposed General Plan has the potential to result in air quality impacts from mobile, area, and energy sources. Mobile sources include vehicle trips within the Planning Area. Area sources include hearth usage, landscaping equipment, off-gassing during the reapplication of architectural coatings, and consumer products (e.g., solvents, cleaning supplies, cosmetics, toiletries). Energy sources include onsite natural gas combustion for space and water heating. Each of these sources was taken into account in calculating the proposed plan's long-term operational emissions, which were quantified using the CT-EMFAC2014 and CalEEMod models.

Table 4.2-12 summarizes daily mobile, area, and energy source emissions generated under existing (2013) and 2035 conditions with and without adoption of the proposed General Plan. Emissions under the proposed General Plan are compared to both existing and 2035 No Project conditions, and the resulting net increase in emissions is compared to BAAQMD's project-level thresholds.

Table 4.2-12. Estimated Maximum Daily Unmitigated Operational Emissions for the Proposed General Plan (pounds per day)[1]

Analysis Condition/Source	*ROG*	*NOx*	*CO*	*PM10*	*PM2.5*
Existing (2013)					
Area	9,155	182	12,079	1,581	1,581
Energy	17	151	77	12	12
Mobile	168	1,149	3,938	2,166	566
Total	*9,340*	*1,482*	*16,094*	*3,759*	*2,159*
2035 No Proposed General Plan					
Area	9,778	193	12,869	1,689	1,689
Energy	22	190	107	15	15
Mobile	189	1,290	4,423	2,429	635
Total	*9,989*	*1,673*	*17,399*	*4,133*	*2,339*
2035 With Proposed General Plan					
Area	9,828	199	12,981	1,699	1,699
Energy	22	194	108	15	15
Mobile	211	1,437	4,929	2,706	707
Total	*10,061*	*1,829*	*18,018*	*4,421*	*2,422*
Net Increase with Proposed General Plan					
2035 With Proposed General Plan vs. Existing	721	347	1,924	662	263
2035 With Proposed General Plan vs. 2035 No Proposed General Plan	72	157	619	288	83
Threshold[1]	54	54	-	82	54
Exceed Threshold?	**Yes**	**Yes**	**-**	**Yes**	**Yes**

Source: BAAQMD 2011b

Notes:

1. BAAQMD's project-level thresholds were developed to analyze emissions generated by a single project and so offer an extremely conservative evaluation of emissions from an entire general plan.

Table 4.2-12 indicates that operational sources under the proposed General Plan would result in a net increase in criteria pollutant emissions that exceeds BAAQMD's project-level thresholds. The analysis accounts for mobile source emission benefits achieved by General Plan policies that increase proximity to transit and mixed-used design; these policies reduce per capita VMT, although total VMT and associated mobile source emissions are projected to increase with the General Plan Update as a result of population and employment growth. The modeling also accounts for natural gas reductions from adoption of mandatory CALGreen Tier 1 energy performance standards. Additional policies of the proposed General Plan and the CAP (listed below) would further reduce per capita operational emissions.

As discussed above, the operational air quality impacts of the proposed General Plan are also evaluated for consistency with the *2010 Clean Air Plan*, in accordance with the BAAQMD's guidance for evaluating programmatic, plan-level projects, to determine whether criteria pollutant emissions attributed to population and economic growth are significant. Impact 4.2-1 provides the *2010 Clean Air Plan* consistency analysis based on the requirements of BAAQMD's (2012b) CEQA Guidelines. The analysis demonstrates that the proposed General Plan would support the goals of the *2010 Clean Air Plan*, include all applicable control measures, and would not conflict with its implementation.

While the proposed General Plan would reduce the severity of growth-oriented criteria pollutants compared to development in the absence of the General Plan's policies by encouraging transit, fostering bicycle and pedestrian infrastructure, and supporting sustainable land use patterns, including mixed-use design and increased density, the increase in development potential under the proposed General Plan may result in a net increase in emissions; moreover, individual projects may still generate emissions in excess of BAAQMD's project-level thresholds. Accordingly, operational criteria pollutant emissions associated with development under the proposed General Plan are identified as significant.

The proposed General Plan and CAP include numerous policies to reduce VMT and associated mobile sources, as well as policies to increase energy efficiency and reduce energy consumption, including energy consumption associated with water use. In addition, Section 8A.7 of the Phase I Zoning regulations requires implementation of TDM measures for projects exceeding a certain size (see discussion under Impact 4.2-1). Mitigation Measure AQ-5 promotes the use of green consumer products, including low-VOC paints. Reductions achieved by this measure cannot currently be quantified since project developers do not have authority to require such products, although they can be encouraged. There is no additional feasible mitigation to reduce operational emissions beyond Mitigation Measure AQ-5 and the policies outlined in the proposed General Plan. Accordingly, operational sources under the proposed General Plan would result in a significant and unavoidable air quality impact.

Belmont Village Specific Plan

Similar to the proposed General Plan, buildout of the BVSP has the potential to result in air quality impacts from mobile, area, and energy sources. Each of these sources was taken into account in calculating the proposed plan's long-term operational emissions, which were quantified using CT-EMFAC and CalEEMod. Table 4.2-13 summarizes daily operational emissions generated under existing (2013) and 2035 conditions with and without adoption of the BVSP. Emissions under

the BVSP are compared to both existing and 2035 No Project conditions, and the resulting net increase in emissions is compared to BAAQMD's project-level thresholds.

Table 4.2-13. Estimated Maximum Daily Unmitigated Operational Emissions for the Belmont Village Specific Plan (pounds per day)[1]

Analysis Condition/Source	*ROG*	*NOx*	*CO*	*PM10*	*PM2.5*
Existing (2013)					
Area	170	3	217	27	27
Energy	1	5	3	<1	<1
Mobile	32	222	760	418	109
Total	*203*	*230*	*981*	*446*	*137*
2035 No Proposed BVSP					
Area	223	5	288	36	36
Energy	1	11	8	1	1
Mobile	40	275	943	518	135
Total	*264*	*290*	*1,238*	*554*	*172*
2035 With Proposed BVSP					
Area	248	6	347	44	44
Energy	2	14	9	1	1
Mobile	47	323	1,108	608	159
Total	*297*	*343*	*1,492*	*654*	*204*
Net Increase with Proposed BVSP					
2035 With Proposed BVSP vs. Existing	*94*	*113*	*511*	*208*	*67*
2035 With Proposed BVSP vs. 2035 No Proposed BVSP or General Plan	*32*	*53*	*253*	*99*	*32*
Threshold	*54*	*54*	-	*82*	*54*
Exceed Threshold?	***Yes***	***Yes***	**-**	***Yes***	***Yes***

Notes:

1. BAAQMD's project-level thresholds were developed to analyze emissions generated by a single project and so offer a conservative evaluation of emissions from an entire specific plan.

Source: BAAQMD 2011b

Table 4.2-13 indicates that operational sources under the BVSP would exceed BAAQMD's project-level thresholds. The analysis accounts for mobile source emission benefits achieved by BVSP policies that increase proximity to transit and mixed-used design, as well as natural gas reductions from adoption of mandatory CALGreen Tier 1 energy performance standards. Additional policies of the proposed BVSP and the CAP (listed below) would further reduce operational emissions.

As discussed under Impact 4.2-1, the BVSP would support the goals of BAAQMD's *2010 Clean Air Plan*, includes all applicable control measures, and would not conflict with its implementation. While the BVSP would reduce the severity of growth-oriented criteria pollutants by encouraging transit, building bicycle and pedestrian infrastructure, and supporting sustainable land use patterns, including mixed-use design and increased density, individual projects may still generate emissions in excess of BAAQMD's project-level thresholds. Accordingly, operational criteria pollutant emissions associated with development under the BVSP are identified as significant.

The BVSP includes numerous policies to reduce VMT and associated mobile sources, as well as policies to increase energy efficiency and reduce energy consumption. Section 31.7 of the Belmont Village zoning regulations requires implementation of TDM measures for projects exceeding a certain size (see discussion under Impact 4.2-1 above). Mitigation Measure AQ-5 promotes the use of green consumer products, including low-VOC paints. Reductions achieved by this measure cannot currently be quantified since project developers do not have authority to require such products, although they can be encouraged. There is no additional feasible mitigation to reduce operational emissions beyond Mitigation Measure AQ-5 and the policies outlined in the BVSP. Accordingly, operational sources under the BVSP would result in a significant and unavoidable air quality impact.

Proposed General Plan Policies that Would Reduce the Impact

Refer to policies identified under Impact 4.2-1.

Proposed Belmont Village Specific Plan Policies that Would Reduce the Impact

Refer to policies identified under Impact 4.2-1.

Proposed Climate Action Plan Measures that Would Reduce the Impact

Refer to policies identified under Impact 4.2-1.

Mitigation Measures

Mitigation Measure AQ-5: Promote Green Consumer Products. For all projects developed within the Planning Area, developer(s) shall provide education for residential and commercial tenants concerning green consumer products. Prior to receipt of any certificate of final occupancy, the project sponsors shall work with the City of Belmont to develop electronic correspondence to be distributed by email to new residential and commercial tenants that encourages the purchase of consumer products that generate lower than typical VOC emissions. Examples of green products may include low-VOC architectural coatings, cleaning supplies, and consumer products, as well as alternatively fueled landscaping equipment.

Impact

4.2-4 Implementation of the Proposed Project would result in a cumulatively considerable net increase of a criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). (*Significant and unavoidable*)

By its very nature, regional air pollution is a cumulative impact. Emissions from past, present, and future projects contribute to unfavorable air quality on a cumulative basis. No single project by itself would be sufficient in size to result in regional nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative negative air quality impacts. As discussed above, BAAQMD has identified project-level thresholds to evaluate impacts to air quality (Table 4.2-5). The thresholds have been adopted to prevent further deterioration of ambient air quality, which is influenced by emissions generated by projects within a specific air basin. The project-level thresholds, therefore, consider relevant past, present, and reasonably foreseeable future projects within SFBAAB. For example, as noted in BAAQMD's (2011b) CEQA Guidelines,

> In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary.

As discussed above, BAAQMD's project-level thresholds do not lend themselves well to the analysis of general and specific plans. Rather, it is more appropriate to evaluate planning-level documents for their consistency with the most recently adopted AQAP, which is the *2010 Clean Air Plan* for the SFBAAB. As discussed under Impact 4.2-1, both the proposed General Plan and BVSP would support the goals of BAAQMD's *2010 Clean Air Plan*, include all applicable control measures, and would not conflict with its implementation. The comprehensive suite of proposed General Plan and BVSP policies would ultimately reduce the severity of growth-oriented criteria pollutants, relative to conditions without the plans, for individual development projects; however, individual projects may still generate construction and operational emissions in excess of BAAQMD's project-level thresholds, even with implementation of Mitigation Measures AQ-1 through AQ-5. Moreover, the increase in development potential under the proposed General Plan may result in a net increase in emissions. Accordingly, ROG, NO_X, PM10, and PM2.5 emissions associated with development under the proposed General Plan and BVSP are identified as cumulatively considerable and significant and unavoidable.

Health Implications of Regional Criteria Pollutants

High levels of criteria pollutants are associated with some form of health risk (e.g., asthma, asphyxiation). Adverse health effects associated with criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, the number and character of exposed individuals [e.g., age, gender]). Moreover, ozone precursors (VOC and NO_X) affect air quality on a regional scale. Health effects related to ozone are therefore the product of emissions generated by numerous sources throughout a region.

EPA develops and considers quantitative characterizations of exposures and associated risks to human health and the environment, known as the Health Risk and Exposure Assessment (HREA). The HREA estimates population exposure to and resulting mortality and morbidity health risks associated with the full range of observed pollutant concentrations, as well as incremental changes in exposures and risks associated with ambient air quality adjusted to meet the existing NAAQS. However, existing models have limited sensitivity to small changes in criteria pollutant concentrations and, as such, translating project-generated criteria pollutants to specific health effects would

produce meaningless results. In other words, increases in regional air pollution from project-generated ozone precursors (ROG and NO_X) would have no effect on specific human health outcomes that could be attributed to specific project emissions. Other criteria pollutant emissions, including CO, PM10, and PM2.5, generally affect air quality on a localized scale. Health effects related to localized pollutants are the product of localized sources and emissions generated by numerous sources throughout a region. Certain air quality models, particularly dispersion models, have the ability to translate project-generated localized pollutants to specific health effects. Refer to Impacts 4.2-5 and 4.2-6 for an analysis of health risks related to PM and CO.

As shown in Tables 4.2-12 and 4.2-13, land uses developed under the proposed General Plan and BVSP would significantly increase emissions of ozone precursors (ROG and NO_X). Ozone precursors generated by buildout of the plans could increase photochemical reactions and the formation of tropospheric ozone, which, at certain concentrations, could lead to respiratory symptoms (e.g., coughing), decreased lung function, and inflammation of airways. Although these health effects are associated with ozone, the impacts are a result of cumulative ROG and NO_X emissions throughout the Bay Area. The BAAQMD Multi-Pollutant Evaluation Method (MPEM) requires a 3 to 5 percent increase in regional ozone precursors to produce a material change in modeled human health impacts. Based on 2008 ROG and NO_X emissions in the Bay Area, a 3 to 5 percent increase equates to over 20,000 pounds per day of ROG and NO_X. Neither the proposed General Plan nor the BVSP would lead to the emission of 20,000 pounds per day of ROG and/or NO_x. Accordingly, the incremental contribution of development supported by the proposed General Plan and BVSP to specific health outcomes related to criteria pollutant emissions would be limited. It is also important to note that growth-related emissions associated with the plans would not occur immediately and all at once, but would instead occur incrementally over time as regional air quality improves and regulations to reduce emissions take effect.

Proposed General Plan Policies that Would Reduce the Impact

Refer to policies identified under Impact 4.2-1.

Proposed Belmont Village Specific Plan Policies that Would Reduce the Impact

Refer to policies identified under Impact 4.2-1.

Proposed Climate Action Plan Measures that Would Reduce the Impact

Refer to policies identified under Impact 4.2-1.

Mitigation Measures

Mitigation Measure AQ-1: Require Tier 4 engines on Construction Equipment. Refer to Impact 4.2-2.

Mitigation Measure AQ-2: Require Construction Fleet to Use Renewable Diesel. Refer to Impact 4.2-2.

Mitigation Measure AQ-3: Require Low-VOC Coatings during Construction. Refer to Impact 4.2-2.

Mitigation Measure AQ-4: Require Fugitive Dust Best Management Practices. Refer to Impact 4.2-2.

Mitigation Measure AQ-5: Promote Green Consumer Products. Refer to Impact 4.2-3.

Impact

4.2-5 Implementation of the Proposed Project would expose sensitive receptors to substantial pollutant concentrations from new sources of toxic air containments. (*Significant and unavoidable*)

Asbestos

Demolition of existing structures results in particulates that may disperse to adjacent sensitive receptor locations. ACM were commonly used as fireproofing and insulating agents prior to the 1970s. The U.S. Consumer Product Safety Commission banned use of most ACM in 1977 due to their link to mesothelioma. However, buildings constructed prior to 1977 that would be demolished by the development supported by the proposed General Plan and BVSP may have used ACM and could expose receptors to asbestos, which may become airborne with other particulates during demolition.

All demolition activities would be subject to USEPA's asbestos NESHAP if asbestos is present at the existing facilities. The asbestos NESHAP regulations protect the public by minimizing the release of asbestos fibers during activities involving the processing, handling, and disposal of ACM. The asbestos NESHAP regulations for demolition and renovation are outlined in BAAQMD Regulation XI, Rule 11-2. Consequently, regulatory mechanisms exist that would ensure that impacts from ACM, if present during demolition under the proposed General Plan and BVSP, would be less than significant.

Diesel Particulate Matter and PM2.5

In a recent court case, the California Supreme Court held that lead agencies are not required to analyze the impacts of the environment on a project's future users or residents, unless the project exacerbates existing environmental hazards (see *California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369) or when the legislature has indicated by specific PRC code (21096, 21151.8, 21155.1, 21159.21, 21159.22, 21159.23, and 21159.24) that specifically defined environmental hazards associated with airport noise and safety, school projects, certain kinds of infill housing, and transit priority projects must be addressed. Certain land use types (e.g., residential mixed use) proposed under the proposed General Plan and BVSP may introduce emission sources (e.g., generators) that would exacerbate existing environmental TAC hazards while also siting a sensitive receptor that may be exposed to the exacerbated existing TAC hazard. Accordingly, this EIR considers both potential effects of plan development on existing receptors, as well as effects of the environment on the proposed General Plan and BVSP land uses.

BAAQMD's CEQA Guidelines (2012b) suggest that general plans establish overlay zones around existing and proposed land uses that emit TACs. Table 4.2-2 in Section 4.2.1, *Environmental Setting*, inventories existing stationary sources within and in proximity to the plan area. Several of these

sources individually exceed BAAQMD's project-level thresholds.[8] The values presented in Table 4.2-2 are conservatively measured at the fenceline of the source, and have been adjusted to reflect OEHHA's and BAAQMD's updated health risk assessment guidelines. Some of the sources may be removed or relocated as a result of development supported by the proposed General Plan and BVSP.

As discussed above, Highway 101, El Camino Real, Ralston Avenue, and Alameda De Las Pulgas currently have ADT in excess of 10,000 ADT. The eastern border of the proposed General Plan and BVSP areas also include the Belmont Caltrain Station, which is a source of existing diesel pollution. Health risks adjacent to the roadways and the Caltrain station are summarized in Table 4.2-14.

Table 4.2-14 Health Risks from Major Roadways (ADT >10,000) and Rail Sources In and Within 1,000 Feet of the Plan Areas In Excess of BAAQMD Project-Level Thresholds

Source Name	*Location*	*Cancer Risk*[1]	*Chronic Hazard*	*PM2.5 Concentration*
El Camino Real	Within GP and BVSP Area	28	<0.1	0.3
Highway 101	Within GP Area	157	0.1	1.0
Ralston Ave	Within GP and BVSP Area	42	0.0	0.7
Alameda De Las Pulgas	Within GP Area	19	0.0	0.3
Belmont Caltrain Station	Within GP and BVSP Area	245[2]	0.1[2]	0.3[2]
BAAQMD Project-Level Threshold		10.0	1.0	0.3

Source: Bay Area Air Quality Management District 2011a; Kirk pers. comm.

Notes:

1. Risks have been adjusted by a factor of 1.3744 to reflect OEHHA's and BAAQMD's updated health risk assessment guidelines (Lau pers. comm.).
2. Risks based on diesel-powered trains. Caltrain is currently electrifying its trains, which will reduce diesel exhaust and associated health risks in the plan area. The first electric trains are anticipated to begin service in 2021 and full electrification is expected by or before 2040, subject to funding (Caltrain 2016; Peninsula Corridor Joint Powers Board 2015).

Locating new sensitive receptors associated with land uses that may also generate TACs (e.g., mixed-used developments) within 1,000 feet of stationary, roadway, or railway sources could result in exposure of these new sensitive receptors to health risks from individual or combined sources in excess of BAAQMD's cumulative thresholds.[9] While the exposure of new sensitive receptors to existing sources of emissions do not constitute a significant environmental impact under CEQA, emissions generated by the new land uses (e.g., from diesel deliveries) may also individually exceed

[8] BAAQMD's project-level health risk thresholds are as follows: cancer risk = 10.0 cases per million; hazard index = 1.0; PM2.5 concentration = 0.3 ug/m^3.

[9] BAAQMD's cumulative-level health risk thresholds are as follows: cancer risk = 100 cases per million; hazard index = 10.0; PM2.5 concentration = 0.8 ug/m^3.

BAAQMD's project-level thresholds or exacerbate existing cumulative impacts. Proposed General Plan Policy 5.10-2 requires new development near TAC sources be designed to minimize any potential health risks, and Policy 5.10-5 provides information about non-toxic alternatives for construction, interior and exterior finishes and furnishings, and planting and landscaping maintenance. BVSP Policies 6.4-2 through 6.4-5 outline requirements for projects within certain distances of existing stationary, roadway, and railway sources to install indoor air quality equipment, such as enhanced air filters or equivalent mechanisms, to minimize health risks to future residents. Policy 6.5-6 also encourages existing uses to retrofit generators with Best Available Control Technology to meet ARB's Tier 4 emission standards. These policies will reduce the potential for new emissions to exacerbate existing emissions in the Project Area for existing and potential new receptors.

Development under the proposed General Plan and BVSP may also result in the installation or operation of new stationary sources of TACs. While it is unknown what specific sources would be installed or where they would operate, all new stationary sources would be subject to the permit authority of the BAAQMD. The BAAQMD will not issue a permit for a new permitted source that results in an operational cancer risk in excess of 10.0 cases per million or a hazard index of in excess of 1.0. Consequently, regulatory mechanisms exist that would ensure that cancer and health hazard impacts from stationary sources developed under the proposed General Plan and BVSP would be less than significant, but may not be sufficient to address PM2.5 impacts if the source results in significant PM2.5 concentrations.

Construction activities of future development projects under the proposed General Plan and BVSP would generate DPM that could expose adjacent receptors to significant health risks. Without specific details on the locations of building footprints or their construction schedules, a quantitative evaluation of potential health risk impacts is not possible. However, Mitigation Measures AQ-1 and AQ-2 would reduce DPM exhaust from construction equipment and associated health risks. Mitigation Measure AQ-6 is also identified to provide a project-level evaluation of construction-related health risks from future projects within 1,000 feet of sensitive receptors.

While proposed General Plan and BVSP policies would reduce operational health risks to future residents, and Mitigation Measures AQ-1, AQ-2, and AQ-6 would reduce construction health risks to existing and future receptors, there may be instances where project-specific conditions preclude the reduction of health risks below adopted thresholds. Therefore, consistent with BAAQMD's plan-level guidance, health impacts from TAC exposure are considered significant and unavoidable.

Proposed General Plan Policies that Would Reduce the Impact

5.10-5 Provide information about non-toxic alternatives to construction, interior and exterior finishes and furnishings, and planting and landscaping maintenance to contractors, business owners and homeowners to enhance indoor and outdoor air quality and reduce exposure to toxins.

In addition, Policy 5.10-2, as listed under Impact 4.2-1.

Proposed Belmont Village Specific Plan Policies that Would Reduce the Impact

Polices 6.4-2, 6.4-3, 6.4-4, 6.4-5, 6.4-6, 6.4-9 as listed under Impact 4.2-1.

Proposed Climate Action Plan Measures that Would Reduce the Impact

There are no strategies in the Climate Action Plan that relate to this topic.

Mitigation Measures

Mitigation Measure AQ-6: Require Future Projects Located within 1,000 Feet of Receptors Perform a Construction Health Risk Assessment. All applicants proposing development of projects within 1,000 feet of existing sensitive receptors, as defined by the Bay Area Air Quality Management District (BAAQMD), shall prepare a site-specific construction health risk assessment (HRA). If the HRA demonstrates, to the satisfaction of the City, that the health risk exposures for adjacent receptors will be less than BAAQMD project-level thresholds, then additional mitigation would be unnecessary. However, if the HRA demonstrates that health risks would exceed BAAQMD project-level thresholds, additional feasible on- and offsite mitigation shall be analyzed by the applicant to help reduce risks to the greatest extent practicable.

Impact

4.2-6 Implementation of the Proposed Project would not expose sensitive receptors to substantial carbon monoxide pollutant concentrations from increased traffic. (*Less than significant*)

Elevated levels of CO concentrations are typically found in areas with significant traffic congestion. CO is a public health concern because it can cause health problems such as fatigue, headache, confusion, dizziness, and even death. As discussed above, BAAQMD has adopted screening criteria that provide a conservative indication of whether traffic volumes will cause a potential CO hot-spot. Traffic data provided by the project engineers indicates that the intersection of Ralston Avenue/El Camino Real would fail BAAQMD's screening criteria, and as such CO concentrations were evaluated following the Caltrans CO protocol (Garza et al. 1997) to evaluate whether traffic associated with the proposed General Plan and BVSP would cause or contribute to localized violations of the NAAQS or CAAQS. Table 4.2-15 summarizes CO modeling results.

Table 4.2.-15. Carbon Monoxide Concentrations at Ralston Avenue/El Camino Real

	Existing (2013)[1]		*2035 No Project*[1]		*2035 Plus Project*[1]	
Receptor[2]	*1-hr CO*[3]	*8-hr CO*[4]	*1-hr CO*[3]	*8-hr CO*[4]	*1-hr CO*[3]	*8-hr CO*[4]
1	5.6	3.1	4.2	2.2	4.2	2.2
2	5.8	3.3	4.2	2.2	4.2	2.2
3	5.7	3.2	4.2	2.2	4.3	2.2
4	5.4	3.0	4.1	2.1	4.1	2.1

Notes:

1. Background concentrations of 3.4 ppm and 1.6 ppm were added to the modeling 1-hour and 8-hour results, respectively.
2. Consistent with the CO Protocol (Garza et al. 1997), receptors are located at 3 meters from the intersection, at 3. each of the four corners to represent the nearest location in which a receptor could potentially be located adjacent to a travelled roadway. The modeled receptors indicated are not representative of the actual sensitive receptors.
3. The federal and state 1-hour standards are 35 and 20 ppm, respectively.
4. The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

As indicated in Table 4.2-15, traffic volumes under the proposed General Plan and BVSP would not result in CO concentrations in excess of the state or federal 1- or 8-hour CO standards at the intersection of Ralston Avenue/El Camino Real. Consequently. CO concentrations in 2035 would be lower than under existing (2013) conditions, despite an increase in traffic volumes. This decrease is due to expected improvements in vehicle engine technology, fuel efficiency, and turnover in older, more heavily polluting vehicles, which reduces exhaust emissions. Since predicted CO concentrations would not violate the NAAQS, the impact of traffic conditions on ambient CO levels in the Planning Area would be less than significant.

Proposed General Plan Policies that Would Reduce the Impact

Polices 2.15-1, 3.4-3, 3.4-10, as listed under Impact 4.2-1.

Proposed Belmont Village Specific Plan Policies that Would Reduce the Impact

Polices 3.2-10, 3.2-24, 3.2-26, as listed under Impact 4.2-1.

Proposed Climate Action Plan Measures that Would Reduce the Impact

Measures TL2 and TL3, as listed under Impact 4.2-1.

Mitigation Measures

None required.

Impact

4.2-7 Implementation of the Proposed Project would not create objectionable odors affecting a substantial number of people. (*Less than significant*)

BAAQMD (2012b) and ARB (2005) have identified the following types of land uses as being commonly associated with odors. Although this list is not exhaustive, it is intended to help lead agencies recognize the types of facilities where more analysis may be warranted.

- Sewage Treatment Plants
- Coffee Roasters
- Asphalt Plants
- Metal Smelters
- Landfills
- Recycling Facilities
- Waste Transfer Stations
- Petroleum Refineries
- Biomass Operations
- Autobody Shops
- Coating Operations
- Fiberglass Manufacturing

- Foundries
- Rendering Plants
- Livestock Operations

None of the above land uses, with the exception of coffee roasters, autobody shops, and coating operations, are located within one mile of the proposed General Plan and BVSP areas. As discussed earlier, the California Supreme Court has opined that impacts of the environment on projects are not subject to CEQA analysis, with limited exceptions. This general rule includes the impacts of existing odor-generating uses on future land uses.

Several of the potential odor-generating land use types identified above are allowed under the City's existing industrial and manufacturing zoning designations, and would continue to be allowed with approval of the proposed General Plan. However, neither the proposed General Plan nor the BVSP include any policies that would expressly encourage these uses or a substantial increase in the amount of land zoned for industrial or manufacturing uses. Additionally, as future development under the proposed General Plan and BVSP must comply with the zoning ordinances, odor-generating uses would only be developed in areas zoned for such uses.

Potential odor emitters during construction activities include diesel exhaust, asphalt paving, and the use of architectural coatings and solvents. Construction-related operations near existing receptors would be temporary, and construction activities would not be likely to result in nuisance odors that would violate BAAQMD Regulation 7. Given mandatory compliance with BAAQMD rules, no construction activities or materials are proposed that would create a significant level of objectionable odors. Accordingly, odor impacts would be less than significant.

Proposed General Plan Policies that Would Reduce the Impact

There are no strategies in the proposed General Plan that relate to this topic.

Proposed Belmont Village Specific Plan Policies that Would Reduce the Impact

There are no strategies in the Specific Plan that relate to this topic.

Proposed Climate Action Plan Measures that Would Reduce the Impact

There are no strategies in the Climate Action Plan that relate to this topic.

Mitigation Measures

None required.